

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

S-E-C-R-E-T

25X1

COUNTRY	Czechoslovakia	REPORT	
SUBJECT	Czech Commercial Publication	DATE DISTR.	8 May 1959 25X1
		NO. PAGES	1
		REFERENCES	RD
DATE OF INFO.			
PLACE & DATE ACQ.			

SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

25X1

STROJEXPORT,

descriptive brochures on eight types of machinery being offered for sale by that organization.

- Also attached for your retention is the January 1959 issue of Economic News Service, published by the Press Service of the Chamber of Commerce of Czechoslovakia.
- The attachments are unclassified when detached from this covering dissemination.

25X1

S-E-C-R-E-T

STATE	ARMY	NAVY	AIR	FBI	AEC	OCR	x
-------	------	------	-----	-----	-----	-----	---

(Note: Washington distribution indicated by "X"; Field distribution by "#".)

ECONOMIC

VOLUME II
January 1959

1

is published by the PRESS SERVICE of the
Chamber of Commerce of Czechoslovakia
13, ul. 28. října, Praha I, telephone 237086,
220652, 227019, 230230, 234061, teleprinter 142
„ECONOMIC NEWS SERVICE“ appears
monthly in German and English

CONTENTS

	Page
(743) Productivity in 1958	1
(744) Basic Industrial Production in November, 1958	3
(745) Industrial Production in 1958	4
(746) Productivity of Industrial Workers	5
(747) Position of the Chemical Industry	7
(748) Chemical Industry Aids Agriculture	8
(749) Production of Dairy Butter	9
(750) Foreign Trade in January—November, 1958	10
(751) Three-Year Trade Agreement with Greece	11
(752) Loan of 5 million Et. \$ to Abyssinia	11
(753) Trade Mission in Ghana	11
(754) Protocol with Guinea	12
(755) Trade Negotiations with Iraq	12
(756) Precision Engineering Imports from Western Countries	13
(757) Precision Engineering Products from GFR	14
(758) Selenium Rectifiers for TV Sets	14
(759) Imports of Iron Ore	15
(760) Imports of Rolled Material	15
(761) Bulldozers from U.S.S.R.	15
(762) Rotary Paper Mill Machine for about US\$ 5 million	15
(763) Special Machine Tools for the Production of Kaplan Turbines	16
(764) Machines for Retreading of Rubber Tyres	16
(765) Transfer Lines for the Motor Car Industry	16
(766) Purchase of Brazilian Sisal	16
(767) Flax from Belgium and Holland	16
(768) Goatskin and Lambskin Purchases	17
(769) PVC for Calcium Carbide	17
(770) Imports of Selected Kinds of Foodstuffs	18
(771) Line for the Production of Condensed Milk Cans	18
(772) 200 Wagon-loads of Food from Soviet Co-operatives	18
(773) 11,000 Tons of Citrus Fruit Imported	19
(774) Orange Purchases	19
(775—808) Export	20
(809) Increased Goods Transport on the Danube	29
(810) London Exporters Interested in Czechoslovak Marine Transport	29
(811) Electrification of Railways	29
(812) Telecommunication and Safety Equipment on Railroads	30
(813) Raw Materials for Steroidal Hormones	31
(814) Excitometry: a New Diagnostic Method	31
(815) High-Pressure Precision Manometer	32
(816—822) Miscellaneous	33

DIMENSION

...
...
...
...
...

NOTE

We have the pleasure in presenting to you the first issue of ECONOMIC NEWS SERVICE, 1959. We wish to draw your attention also to the fact that unless your order is received by the end of January, 1959, we shall assume that you are not interested in our news containing at least 60 items each month. In this case we shall discontinue sending the ECONOMIC NEWS SERVICE to your address as from the second number to be issued on February 6, 1959.

Should you decide to subscribe to the ECONOMIC NEWS SERVICE at a later date kindly note that the subscription fee amounts to US\$ 3.00 while the price of the individual copies is US\$ 0.30. The No. of our account with the Czechoslovak State Bank is 81/621/ENS.

The equivalent of the required amount can also be remitted in your own currency.

Editor, PRESS SERVICE
Ul. 28. října 13, Praha 1

CZECHOSLOVAKIA'S NATIONAL ECONOMY

Productivity in 1958

743

In 1958 productivity developed very favourably, especially in industrial production.

For the first time, after several years, the rate of productivity increase was in accordance with the high rate of increase of industrial production. During the first 10 months of 1958 productivity increased by 7.9 % compared with the corresponding period of 1957. The State Plan of productivity was fulfilled and surpassed in all branches of industry. This applies also to heavy engineering works, where, in spite of a steadily increasing productivity, the figures set forth in the State Plan were not attained in past years. The satisfactory results reached in 1958 are due to the new organization of industrial management, new plants put into operation, better utilization of working time, and higher exploitation of machinery and equipment.

In 1958 exploitation of machinery and equipment improved especially in the following branches of industry: fuels, power supply, and chemicals. For instance, the average monthly output of a coal-cutting combine in the most important pit coal region of Ostrava-Karvinná amounted to 1,867 tons in the third quarter of 1957, while for the corresponding period of 1958 this figure was increased to 3,283 tons. The share of mechanically loaded pit coal at the coal face increased from 10.3 % to 23 % during the same period. In surface coal mines operational time of bucket excavators increased from 1,100 hours to 1,313 hours in 1958, and the operational time of scoop-wheel excavators increased from 1,296 to 1,337 hours. In power supply the installed output of thermal power stations was utilized for 1,212 hours in 1958 against 1,190 hours in 1957. In the chemical industry loading of stovary furnaces and flash roasting furnaces used in the production of sulphuric acid were increased, etc.

The better utilization of working time contributed substantially to the improvement of productivity in all branches of industry. Figures of working time utilized, expressed as a percentage of total working time available, are given in the following table (compiled for the whole Czechoslovak Industry):

Czechoslovak Industry Year	Month									
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
1958	91.7	90.9	91.2	92.0	92.5	92.1	91.5	90.6	91.8	91.9
1957	89.9	89.5	90.4	91.0	91.2	90.8	90.1	89.4	90.6	97.7

Improvements achieved in 1958 were largely due to the reduction of absence because of illness and accidents. The figures of 1958 represent best results for a period of many years.

The percentage of working days wasted due to illness and accidents, related to the total number of working days available, is shown in the following table (compiled for the whole Czechoslovak Industry):

Czechoslovak Industry Year	Month									
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.
1958	6.0	6.8	6.4	5.6	5.2	5.2	5.5	5.8	5.4	5.3
1957	7.8	8.3	7.4	6.8	6.5	6.7	6.8	7.0	6.5	9.1

INDUSTRY

Basic Industrial Production in November, 1958

744

Production figures of basic industrial products for November, 1958, proved again the general trend of the 1958 Czechoslovak industrial production characterized by a large scale increase according to the State Plan. In November of 1958 the planned figures of industrial production were surpassed by 3 %. Total volume of production for the first 11 months of 1958 was by 3.1 % above the plan, while the rate of production increase was by 11.4 % higher than in the corresponding period of 1957.

Production figures of basic industrial products were as follows:

		1957 Nov.	1958 Nov.	1958 Jan.-Nov.	Jan.-Nov. Index <u>1958</u> <u>1957</u>
Pit coal	thousand				
(gross)	tons	2,304	2,394	24,900	106.7
Brown coal	thousand				
(gross)	tons	4,415	4,569	50,075	112.0
Pig iron	thousand				
	tons	298	329	3,448	106.3
Crude steel	thousand				
	tons	398	438	4,603	107.0
Rolled	thousand				
products	tons	303	334	3,407	107.6

Industrial Production in 1958

745

The third year of the Second Five-Year Plan of Czechoslovakia is characterized by the high rate of increase of industrial production. Preliminary records indicate an increase of the total industrial production in 1958 by about 11.5 % compared with 1957, i. e. by about 3 % above the State Plan.

In accordance with the policy of economic development embodied in the State Plan, the fuel and electric power base of industrial production was strengthened considerably. This is confirmed by the production figures for coal and electric power. Subject to some corrections by final statistics, records available by the end of the year gave the following picture of the 1958 industrial production. Pit coal 27.1 million tons (by 7 % more than in 1957), brown coal 54.7 million tons (12 %), lignite 2.6 million tons (15 %), electric power 19,500 million kWh (10 %). Production of natural gas amounted to 1,300 million cu. m. The raw material basis of the engineering industry has been ensured by the production of 5.58 million tons of steel which is an increase of about 8 % compared with 1957, and 3.77 million tons of rolled products — an increase of 7.8 % compared with 1957.

Among other products characteristic for the overall development of the national economy, sulphuric acid and cement are worth mentioning. The 1958 production of 467,000 tons of sulphuric acid represents, according to preliminary data, an increase of 5 % compared with 1957. The corresponding figures for cement production are 4 million tons and 11.4 % respectively.

Industrial production is largely responsible for the standard of living of the population. The 1958 production of industrial goods with its direct effect on the living standard justifies the assumption that the increasing trend of the standard of living will be maintained also in future years. In 1958 43,400 passenger cars were produced (an increase of 26 % compared with 1957), motorcycles and scooters 165,500 (18 %), electric and gas kitchen ranges 119,000 (32 %), television sets 132,000 (67 %), cotton fabric 404 million metres (9 %), woollen fabric 43 million metres (12 %), shoes 80 million pairs (13 %). Essential foodstuffs produced in 1958 were: meat 413,000 tons, butter 59,000 tons and sugar 868,000 tons.

In 1958 total industrial production developed at an undiminished rate. Therefore, the expectation that the Czechoslovak Industry will be able to fulfil the Second Five-Year Plan before the planned date, seems to be fully justified.

Productivity of Industrial Workers**746**

In 1958 the level of productivity expressed in physical units produced per head was higher than in 1957 especially in the essential fields of coal mining, electric power generation, steel production, rolled products, and manufacture of bricks and roofing tiles. Favourable results were achieved especially in the production of brown coal, electric power, bricks and roofing tiles. For instance, brown coal production in tons per worker increased in the IIIrd quarter of 1958 by 9 % compared with the same period of 1957, the same increase being attained in electric power generation, while the corresponding increase in brick and roofing tile production amounted to 8.2 %.

	Productivity in physical units		
	I quarter	II quarter	III quarter
Production of pit coal in tons per worker in pit coal mines, per- cents of 1957 production 1958	100	102	100
Production of brown coal in tons per worker in brown coal mines, percents of 1957 production 1958	109	111	109
Electric power generation per worker in power sta- tions, in thousand kWh, percents of 1957 production 1958	114	120	109
Average daily production of steel, in tons per year per sqsm of hearth surface area of open-hearth furnaces, percents of 1957 production 1958	112	100	102
Production of rolled products per worker in rolling mills in tons, percents of 1957 production 1958	108	104	106

Productivity in physical units

	I quarter	II quarter	III quarter
Production of bricks and roofing tiles in thousand units per worker, per- cents of 1957 production. 1958	120	99	108
Production of worsted yarn in kg per hour per worker in spinning mills, percents of 1957 production 1958	98	109	109

Position of the Chemical Industry**747**

Before World War II the chemical industry of Czechoslovakia developed rather irregularly. As far as raw materials and technological methods were concerned, it was fully dependent on foreign industries. Under these circumstances the chemical industry was far below the general level of other Czechoslovak industries. Only after 1945, when conditions of planned economy were introduced, did development accelerate, and the increase of the rate of chemical production became higher than that of other industries. Compared with 1948 chemical production increased 4.1 times, while total industrial production increased only three times, both figures being related to the level of 1958.

The share of chemical production, including the rubber industry, in the total industrial output of the country is 5 % only. Nevertheless, the chemical industry will play a decisive role in the development of the national economy during the third Five-Year Plan. Its share in total industrial production should increase by 126 % in 1965 compared with 1957.

This increase is to be attained by the development of the production of chemicals, especially in the fields of plastics, synthetic fibres and fertilizers. From among plastics hitherto produced principal production increase is planned for PVC, aminoplasts and polyamides. New productions to be started are polystyrene, silicones and polythene. In synthetic fibres the production of polyamide, textile and cord silk will be increased substantially, and that of polyester fibres introduced.

The present level of production of some basic chemical articles is given in the following table:

	(in thousand tons)		
	1953	1957	1958 (estimate)
Nitrogenous fertilizers	35.4	74.4	107.1
Phosphorous fertilizers	70.1	110.4	119.8
Sulphuric Acid	311.4	445.1	467.0
Calcinated Soda	84.1	95.9	93.0
Viscose silk fabric	8.1	9.6	9.6
Viscose silk cord	2.3	4.0	4.1
Viscose rayon	25.3	32.9	39.3

It can be seen that during the last five years production of nitrogenous fertilizers increased by 202 %, phosphorous fertilizers by 71 %, sulphuric acid by 50 %, calcinated soda by 11 %, and synthetic fibres by 58 %.

AGRICULTURE

Chemical Industry Aids Agriculture

748

The development of the Czechoslovak chemical industry in 1958 was characterized by high production increases. During the first ten months of 1958 the volume of its output rose by 11 % as compared with the same period of 1957. Not only does the development of this industry meet the steadily growing requirements of the national economy in general but it also aids efficiently agriculture. Up to the end of last October 833 thousand tons of N nitrogenous fertilizers and 97.3 thousand tons of P_2O_5 phosphorous fertilizers were produced in Czechoslovakia. This output combined with the imports of potassium fertilizers enabled to supply agriculture with 400 thousand tons of nutritive fertilizers in 1958. Full merit of this steady development can be found in the rising consumption of phosphorous and potassium fertilizers; the former was 15.6 and the latter 25.2 kg in pure nutritive materials per 1 hectare of cultivated soil in 1958.

Despite last year's weather which was too bad for the Czechoslovak agriculture, vegetable production was increased as compared with the 1957 level, and higher yields of some crops per hectare were achieved.

The contribution of our chemical industry does not merely consist in a higher output of fertilizers. The chemical industry also aids agriculture in destroying pests. In 1958, for instance, the production of new and highly efficient insecticides such as Fosfothion, the complex medium for killing beet, hop and fruit-louse, and fungicides such as Novozir, designed to combat parasitic fungi on fruit-trees, potatoes, etc., was introduced. The fertilizing methods which find an ever-wider range of application both in agriculture and forestry combined with an effort to protect vegetation against infestation by air dusting of the cultivated soil and forests, shows the important role which the chemical industry has been called upon to play. Last year, for instance, 331 thousand hectares of soil were dusted from the air of which 230 thousand hectares of infested ground were treated.

Production of Dairy Butter

748

The food industry continues to increase the production of butter and dairy products as shown by the figures stated below. In 1953 only 35,252 tons of dairy butter were produced.

1954 37,042 tons

1955 43,197 tons

1956 49,122 tons

1957 52,111 tons

This trend of development points to another increase in the production of butter of about 59 thousand tons in 1958.

As compared with 2,364 thousand litres in 1953 the production of cream in 1957 was increased to 13,417 thousand litres. The production of cheese rose from 18,214 tons in 1953 to 35,911 tons in 1957.

The increased production of butter is due to the improved average yields of milk per annum which results also in a higher production of cream, cheese, curdle, tinned milk and frozen milk products.

FOREIGN TRADE

Foreign Trade in January—November, 1958

750

In November of 1958 the turnover of Czechoslovak foreign trade amounted to Kčs 1,922 million bringing the total from January 1st to about Kčs 18,500 million. This figure compared with that of the corresponding period of 1957 represents a further increase.

	January to November (in million Kčs)		Index
	1957	1958	<u>1958</u> 1957
Turnover	17,279	18,435	106.7
Imports	8,574	8,498	99.1
Exports	8,705	9,937	114.2
Balance	+ 131	+ 1,439	

Czechoslovak exports maintained the same rate of increase as in preceding months. Consequently the balance of foreign trade is highly favourable. During the difficult period on the Western markets, trade with Socialist countries is being increased.

	January to November (in million Kčs)		Index
	1957	1958	<u>1958</u> 1957
Turnover with			
a) Socialist countries	11,453	12,815	111.9
b) All other countries	5,826	5,620	96.5

According to the data available at the end of the year, the total turnover of foreign trade in 1958 amounted to Kčs 20,500 million.

TRADE NEGOTIATIONS

Three-Year Trade Agreement with Greece

751

On December 6th, 1958, talks on the further development of Czechoslovak-Greek trade relations were concluded in Athens by signing a long-term agreement covering the exchange of goods and payments for the period 1959—1961. The new three years' agreement which is valid from January 1st, 1959, provides for an increase of goods exchange in 1959 by about 40 %, in 1960 by 60 %, and in the last year of the validity of the agreement by about 73 % compared with the present situation.

The list of Czechoslovak exports contains mainly machinery and equipment, sugar, sawn timber, products of the paper, ceramics, glass and textile industries. Greek exports consist mainly of agricultural products: tobacco, cotton, southern fruit, and various ores, hides, resins and other products. Problems of sea-transport and arrangement of payments were also among the subjects discussed. The agreement promotes the development of the exchange of goods and creates new marketing possibilities for Greek agricultural products and Czechoslovak goods.

The agreement is valid until December 31st 1961 and contains a clause of extension for another year.

Loan of 5 million Et.\$ to Abyssinia

752

This five-year loan the equivalent of which is about 15 million Czechoslovak crowns has been granted by Czechoslovakia for the construction and equipment of all types of hospitals including designs, building materials, etc. The first hospital will be built at Harar and run by Czechoslovak personnel. Negotiations concerning the construction of another hospital are conducted.

Trade Mission in Ghana

753

The Czechoslovak trade mission which visited Ghana last year, has submitted some concrete suggestions to the respective authorities regarding the expansion of direct trade. These suggestions which are being studied may form the basis of a future trade agreement.

Protocol with Guinea

754

On the occasion of the visit of the Czechoslovak trade delegation to Conakry a protocol was signed which provides for a barter trade for 2 million US\$ on either side. The protocol deals, in addition, with questions of scientific and technical cooperation in the field of geological survey, radio engineering, public works, etc. It will lead, finally, to a long-term trade agreement.

Trade Negotiations with Iraq

755

Trade negotiations between the delegations of the Czechoslovak and Iraqi Governments were conducted at Baghdad last December. The talks were concluded on December 14 by signing a trade agreement for a period of 3 years including a protocol on scientific and technical cooperation. The agreement provides for a considerable expansion of mutual trade relations.

Czechoslovakia will supply the Republic of Iraq, above all, with complete industrial plant and engineering products in addition to textile fabrics, glass and sugar, the traditional articles of Czechoslovak manufacture.

Iraq will export to Czechoslovakia various agricultural products, such as oil seeds, cotton, dates, etc.

IMPORT

Structure of Precision Engineering Imports from Western Countries

756

During the last three years certain changes took place in the territorial structure of imports of precision engineering products. The main effect of these changes is the increased share of the largest supplier countries in Czechoslovak imports.

Country	Share in total imports — %		
	1956	1957	1958
German Federal Republic	33.3	26.3	29.7
Switzerland	17.2	28.6	25.2
Great Britain	13.1	6.6	8.9
Italy	8.1	9.2	6.7
Austria	4.5	6.1	6.9
Sweden	4.5	6.4	8.4
France	3.9	4.3	4.9
Holland	3.3	4.4	2.5
Other countries	32.1	8.1	6.8
Total	100.0	100.0	100.0

In 1958 a sharp decline of imports from Switzerland in favour of the German Federal Republic was recorded. This was due to her higher elasticity in trade relations and better adaptability to the market situation. The low share of Austria is also remarkable, as the production facilities of this country are equally suitable to meet the demands of Czechoslovak importers as those of the German Federal Republic.

Precision Engineering Products from the German Federal Republic

757

The German Federal Republic is the largest western exporter of precision engineering products to Czechoslovakia. A sharp increase of West German exports was noticeable particularly in the last years. A record was reached in 1958 as shown in the following import indices:

Year	Index
1955	100
1956	211
1957	227
1958	355

The main items imported by the KOVO foreign trade corporation were photo-ciné apparatus and other optical instruments, machines for the textile and printing industries, sanitary equipment and precision measuring instruments.

Due to the rapidly growing demand of the expanding national economy, future imports of these products will be still larger. However, a further increase of the West German share will depend on the possibilities of increased Czechoslovak exports to the German Federal Republic. The present relation between exports and imports of precision engineering products is unfavourable for Czechoslovakia. Although the exports increased in 1958 by 180 % compared with 1956, they amounted only to one sixth of the imports realized during the same year. In the future KOVO will endeavour to import goods on a larger scale as an exchange for its own products. Trading results reached in 1958 confirmed the mutual advantages of this system.

Selenium Rectifiers for T V Sets

758

The number of countries interested in the supply of selenium rectifiers to Czechoslovakia (see report No. 678) has been extended to include Hungary. The samples supplied by the Hungarian foreign trade company are being tested. Orders for the whole year of 1959 have not been placed yet (for the first quarter only).

Imports of Iron Ore

759

Although Czechoslovakia belongs already to-day among the largest iron ore importers her requirements are steadily rising. Thus, the imports of iron ore from Brazil have been increased by 420 % as compared with the 1956 level. In addition to old suppliers such as India, Sweden, Iran and the socialist countries, METALIMEX has extended its purchases to Spain, Tunisia and Chile. With the latter country a big long-term contract for the supply of high-grade iron ore is to be signed shortly.

Imports of Rolled Material

760

In 1958 Czechoslovakia appeared on western markets as a buyer of large lots of rolled material. Besides this considerable quantities of Czechoslovak intermediates were re-rolled in West German and French mills.

FERROMET foreign trade corporation intends to proceed with similar transactions in 1959 too.

Bulldozers from U.S.S.R.

761

STROJIMPORT imports several hundreds of bulldozers from the U.S.S.R. per year which are noted for their outstanding quality, reliability and extremely advantageous low price. The possibility of increasing the annual quota has been taken into consideration.

Rotary Paper Mill Machine for about US\$ 5 million

762

For the purpose of increasing the output of newsprint Czechoslovakia intends to import through STROJIMPORT a new paper mill machine (width 6.5 metres, speed 700 metres). Offers for this important order of about five million dollars have been received from the following countries: Finland, Sweden, Great Britain, the German Federal Republic as well as from Austria for the supply of auxiliary equipment. Canada will also be invited to submit an offer. The main factors which will be conclusive for placing this order are: technical standard, price and purchases of Czechoslovak goods in exchange.

Special Machine Tools for the Production of Kaplan Turbines 763

To permit a considerable extension in the output of Kaplan turbines in Czechoslovakia the ŠKODA Works, Plzeň were to produce a special combined machine tool. Since two French firms have submitted offers amounting to about US\$ 500,000 at more advantageous terms (shorter terms of delivery) it may be expected that the machine will be imported from France.

Machines for Retreading of Rubber Tyres 764

To keep in line with other countries with highly developed motor traffic it is intended greatly to improve tyre retreading facilities. With this object in view STROJIMPORT wishes to import various special machines for retreading. Offers have been submitted by firms from the German Federal Republic; further offers are expected.

Considerable Need of Transfer Lines for the Motor Car Industry 765

The modernization of the motor car works at Mladá Boleslav goes on in a swift pace. A number of transfer lines for the production of motor cars and tractors will be imported. Offers have been made by Italy, France and the German Federal Republic. Further offers are on the way.

Purchase of Brazilian Sisal 766

About 545 tons of sisal were imported from Brazil in the last quarter of 1958. Czechoslovakia is in a position to treble her imports provided Brazil will accept to a greater extent Czechoslovak goods for payment.

Flax from Belgium and Holland 767

CENTROTEX bought 660 tons of flax in Belgium during the last months of 1958. A smaller parcel, 100 tons, was imported from Holland.

Further purchases are slowing down because the timely securing of import licences for Czechoslovak textiles is developing unfavourably.

Goatskin and Lambskin Purchases

768

In November last year an expert of CENTROTEX visited Iraq to examine buying possibilities on the skin market. This market research resulted in a trial order for goatskin valued Kčs 250,000. Quality and processing properties will be tested in Czechoslovak tanneries. Regular large scale imports of this raw material are to be carried out in the future.

CENTROTEX is also interested in supplies of lambskin. The delivery of a small lot is being negotiated. Should tests in the fur and glove industries produce satisfactory results, Czechoslovakia will become a regular buyer of lambskin.

PVC for Calcium Carbide

769

In spite of the high rate of her own PVC production, Czechoslovakia has to meet high inland requirements by imports. A further increase of imports is expected in 1959, and this offers to foreign manufacturers a good chance of selling their products. CHEMAPOL will give preference to suppliers who will be willing to accept deliveries of calcium carbide for payment.

Imports of Selected Kinds of Foodstuffs**770**

The value of the imported foodstuffs in 1957 including raw materials and semi-products was 2,322 million crowns (carriage paid to border of the exporting country), or 23.3 % of the total Czechoslovak imports. The following table shows the trend of imports of the most important foodstuffs during the last six years (see report No. 611). The data for 1958 apply to imports from January to September.

Foodstuffs	Unit	1953	1954	1955	1956	1957	I-IX 1958
Consumption wheat	thousand tons	569	716	816	661	974	681
Meat incl. slaughter-	thousand tons	35	79	77	55	54	75
house cattle	thousand tons	35	79	77	55	54	75
Fish and fish products	thousand tons	29	43	44	41	40	29
Fats, raw materials	tons of value of fat	97 055 99	971 90	329 89	655 119	523 72	022
Rice	thousand tons	30	28	40	57	81	58
Vegetables	thousand tons	36	56	46	57	92	50
Fruit	thousand tons	108	104	133	110	106	33

Line for the Production of Condensed Milk Cans**771**

Higher output and exports of condensed milk have called for an increase in the production of cans. To meet this development STROJIMPORT intends to import in 1959, if possible, a fully automatic line. Offers for this equipment of an approximate value of US\$ 100,000 have been submitted by Italian, British and German firms so far. Their technical level and degree of automation are being examined.

200 Wagon-loads of Food from Soviet Co-operatives

772

In the pre-Christmas period Soviet co-operatives delivered to Czechoslovakia more than 200 wagon-loads of foodstuffs. Supplies contained pork, caviar and hazelnuts. Honey deliveries from the USSR to Czechoslovakia amounted to 750 tons.

11,000 Tons of Citrus Fruit Imported

773

Following the large citrus fruit imports for the Christmas market, KOOSPOL intends to buy a further 11,000 tons during the first quarter of 1959. This quantity should meet the increasing demand of the Czechoslovak population.

In realizing these purchases those countries will be preferred which do not limit the imports of Czechoslovak goods as well as the exporters of which pay attention to the quality of exported goods and do not raise speculatively their prices before the purchase season as they are well aware of the fact that only in this way can they stabilize their position on the Czechoslovak market which provides a prospect of increasing sales.

Orange Purchases

774

KOOSPOL's interest in citrus fruit purchases in Spain (see report No 683) was documented by the importation of 500 tons of oranges. KOOSPOL contemplates upon further imports.

EXPORT

Complete Industrial Plants to China

775

During the Czechoslovak-Chinese trade talks now proceeding in Praha long-term agreements for deliveries of capital goods to China have been concluded. The major share in exports goes to TECHNOEXPORT, a foreign trade corporation for export of complete industrial plants. This corporation will deliver in addition to the equipment under contract several cement works, a rolling mill train, 50 small water power stations, machinery for several factories of pressed fibre boards, etc. to different economic regions of China by 1962. Orders for 1959 alone are estimated at 250 million crowns.

Equipment for a Rumanian Power Station

776

Credits granted on the occasion of last year's visit of the Rumanian Government delegation to Praha cover the delivery of a thermal power station to be erected in the Rumanian town of Ludus by September 1963. Steam will be generated in three 330 t/h boilers and the total output will be 3×100 MW. Contracts for the design project and lay-out were signed last month.

Boats to the USSR

777

Exports of boats to the USSR proceed successfully (see report No 342). Four passenger boats and eight tugs have been delivered since July 1958. The total value of 1958 exports including suction-dredgers amounts to Kcs 130 million. River-boat deliveries to the USSR were constantly increasing during the last years and this trend is again reflected in trade agreements for the coming years. Future deliveries include a new type of a suction-dredger having an output of 725 cu. m/h.

WD 250 Horizontal Boring and Milling Machine Installed in Finland

778

The WD 250 horizontal boring and milling machine which weighs 105,000 kg and is designed for boring and milling of heavy workpieces was installed in Finland at the end of the year as the first delivery of this kind to northern Europe. The operational tests have proved successful and two more inquiries have been received from Finland.

**Plants Producing 14,500 Tons of Ceramic Ware Annually
for Turkey**

779

Representatives of TECHNOEXPORT made arrangements with the Sumer Bank in Ankara for the supply of equipment for two complete ceramics factories. The major part of the plant for Turkey is being produced by the P'ferov Engineering Works which will deliver the complete machinery and equipment by 1960 and 1961 respectively. The total annual output of both factories will be 14,500 tons of finished ceramic ware. Assembly of a similar plant previously ordered by Turkey and fully delivered by TECHNOEXPORT will start at the beginning of 1959.

Forging Presses for Chinese Industry

780

Two large forging presses with pressures of 3 000 and 6 000 tons, supplied by Strojexport were put into operation in China in the third and fourth quarters of this year under the supervision of Czechoslovak experts. Both were made in the Škoda Works, and both are the most modern of their type from the technological point of view.

Machines for the Production of High-pressure Vessels in China

781

According to an agreement now being negotiated in Praha, Strojexport will supply China with complete equipment for a plant for the production of strip-wound high-pressure vessels according to the new method developed in this country. Deliveries, which will begin next year, will consist primarily in heavy lathes for diameters of up to 2.5 metres and boring machines with spindle diameters of up to 160 mm, as well as various types of turret lathes, radial drills, and other machinery supplied by many different Czechoslovak heavy engineering plants, among which the largest role will be played by the Škoda Works. The possibility of supplying yet another plant with similar machinery is being considered.

Pumping Stations on the Nile

782

In December last year two pumping stations supplied by STROJEXPORT in 1958 (see report No 22) went into trial operation. Each pumping station is equipped with three horizontal centrifugal pumps of the A 1200 type delivering 2.5 and 3.5 cu. m of water per second. The pumps were manufactured by the renowned Czechoslovak factory of Sigma at Lutín.

Three Dairies for the UAR

783

At the end of 1958 a group of Egyptian experts visited Czechoslovakia to discuss the delivery of complete equipment for three dairies. The order is worth 600,000 pounds (it will be paid by credits granted to Egypt by the Soviet Union for the industrialization of the country). The dairies will be fitted with piping made of unbreakable glass with special cleansing equipment. The capacity of each dairy will be about 30,000 litres of milk per day.

Strojexport Among the Five Largest Exporters of the World

784

Exports of flour mill equipment show an increasing tendency, and, in this field, Czechoslovakia ranks among the five largest exporters of the world. Complete flour mill equipment is being exported besides individual machines. From the list of deliveries realized in 1958 the following orders are worth mentioning: the 100 ton mill for Messrs. Molinos Harineros del Paraguay (see report No 213), a mill of the same capacity delivered to Natal in Brazil (see report No 114) which was the first to be equipped with gravitational piping made of glass, the 200 ton flour mill for New Delhi and other mills delivered to UAR (Egypt) and Burma. The makers of these flour mills are the Food and Refrigeration Machinery Works (formerly Prokop) producing equipment for the food industry since 1870. Products of this works are exported through STROJEXPORT to the whole world.

Drinking Water Treatment Installation for Cairo

785

A large plant for drinking water treatment is being constructed in Cairo. This station (see report No 22) will supply 325,000 cu. m purified water daily for the water supply system of the northern districts of the capital. The principal supplier of the plant is the renowned Královo Pole Engineering Works in Brno with further 21 Czechoslovak factories participating. Deliveries should be completed by the middle of 1959, and operation should commence in 1960. A technical novelty is the use of filter-nozzles made of NOVODUR (a Czechoslovak plastic).

60 Diesel-Electric Locomotives for U.S.S.R.

786

STROJEXPORT will supply the U.S.S.R. with sixty 750 H. P. shunting Diesel-electric locomotives in 1959 and 1960. The quantity production of these locomotives which are a variant of the T 435.0 series engines was started at the ČKD Sokolovo works during the last quarter of the last year. The value of this order is about Kčs 50 million.

Chile — Machine Tools for US\$ 100,000

787

UTE (Universidad Tecnica del Estado) has purchased machine tools for US\$ 100,000 which will be used for the training of young workers. The machines are now being shipped by STROJ-EXPORT.

60,000 Bicycles for U.S.A. in 1959

788

Last December the foreign trade corporation of MOTOKOV signed a contract with their U.S.A. representative for the delivery of 30,000 boys' and girls' bicycles of a value of US\$ 230,000. Another contract for 30,000 bicycles and parts is expected to be concluded later in 1959.

While the exports of Czechoslovak bicycles to the U.S.A. maintain their old level, the exports of parts have been considerably increased.

Bicycles to Venezuela

789

In 1958 MOTOKOV delivered to Venezuela various types of Czechoslovak bicycles and spare parts valued at Kčs 200,000.

700 ZETOR Tractors Delivered to India

790

During the second half of 1958 MOTOKOV delivered 700 Czechoslovak ZETOR tractors to India. Deliveries were realized on a barter agreement.

20,000 Washing Machines Contracted with the GDR

791

MOTOKOV has concluded large contracts for this year's deliveries of consumer goods to the German Democratic Republic. Besides PEROBOT washing machines deliveries will include JUPITER vacuum-cleaners, gas, electric and combined cooking ranges and a large quantity of electric steaming irons.

MOTOKOV Representation in Iraq

792

Discussions of MOTOKOV representatives in Iraq have resulted in the establishment of an agency for sales of Czechoslovak passenger cars, lorries and buses. Car exports were initiated by a trial order for 50 cars of the Škoda 440, 445 and 450 types. The first demonstration of all types of Czechoslovak cargo vehicles will be arranged in January 1959.

Tatra 111 Lorries to the UAR

793

In December last year MOTOKOV delivered 15 Tatra 111 dumping trucks to the Syrian province of the United Arab Republic. These vehicles with air-cooled twelve-cylinder engines gave satisfactory performances especially during the building of the new refinery at Homs constructed by Czechoslovakia (see report No 14).

Export Novelty: The Manet S 100 Scooter

794

MOTOKOV foreign trade corporation will start deliveries of the new Czechoslovak Manet S 100 Scooter during the first quarter of 1959. The scooter will be exhibited at the Leipzig Spring Fair. Sample scooters were supplied to agents abroad at the end of last year.

The Manet S 100 carries one or two passengers being designed for a permissible load of 150 kg. The air-cooled two-stroke engine with a single vertical cylinder has a cooling fan, displacement of 98 cu. cm and a performance of 4.5 b. h. p. Maximum speed is 70 km/h, fuel consumption 2.3 litres at 50 km/h. The pedal-operated change-speed gear has four speeds. Equipment includes an electric starter and a battery-generator ignition system. The scooter carries a windshield made of plexi-glass and luminous direction indicators.

Novelty of 1959: Škoda 440-Octavia

795

MOTOKOV foreign trade corporation will appear on the automobile market with an improved type of the Škoda 440 in February this year. Improvements include spiral spring suspension of the front wheels, new radiator grille, shape of steering wheel and instrument panel.

First contracts have been signed for deliveries of 500 cars to the German Federal Republic, 300 to Belgium and 200 to Norway.

Exports of Floor Covering

796

Czechoslovak floor coverings of the ZLINOLIT, NOVOLEUM and LINOL types are in great demand on foreign markets. ZLINOLIT worth Kčs 450,000 was recently sold to the USSR, exports to Switzerland amounted to Kčs 200,000 and those to the UAR (Egyptian region) Kčs 140,000. PRAGOEXPORT has concluded a contract with Turkey for the supply of LINOL worth half a million Kčs. Israel will import NOVOLEUM valued at Kčs 400,000.

Electricity Meters for the UAR (Egypt) and Greece

797

The KOVO foreign trade corporation has recently concluded a contract with the Cairo Electricity and Gas Administration for the delivery of 45,000 single-phase and three-phase electricity meters. The contract is the result of a Government tender with keen foreign competition. Today several hundred thousands of Czechoslovak electricity meters of the Křížík type are used in Egypt. They were all supplied during the short period of the last three years.

In October and November, last year, contracts were signed with Greece for the delivery of 40,000 electricity meters.

L 60 Airplane to Ceylon

798

At the end of 1958 the OMNIPOL foreign trade corporation delivered to the Ministry of Agriculture a multi-purpose L 60 airplane of the "Brigádýr" type. The plane will be used primarily for preventive sprayings of tea, rice and rubber plantations. Together with the former deliveries of the Sokol and Aero 45 planes the L 60 is the fourth Czechoslovak plane in operation over Ceylon.

10,000 Sets of Table Linen to the German Federal Republic

799

Recently CENTROTEX shipped 10,000 sets of damask table linen to the German Federal Republic. Large orders of the fine damask products awarded a Grand Prix at the World Exhibition in Brussels were placed last year in Czechoslovakia by the U.S.A., Switzerland, Sweden, Norway, Finland and Denmark.

Large quantities of fine linen suitable for embroidery and other purposes have been exported by CENTROTEX to Central America. Not long ago another Czechoslovak novelty in linen materials was introduced — a collection of printed dishcloths in elaborate patterns.

Last year a total of 9,000,000 dishcloths and 1,000,000 sets of damask table linen were exported. Several tens of thousands of these products were provided with woven monograms and inscriptions according to the wishes of customers.

Exports of Leather Gloves Increased by 20 %

800

Exports of leather gloves increased in 1958 by 20 % compared with 1957. The increase was due to the renewal of business connections interrupted by World War II especially in overseas countries.

During the last two months of 1958 CENTROTEX exported leather gloves worth Kčs 800,000 mainly to the USA, Sweden, Great Britain and Holland. Inquiries were received from Canada and other overseas countries.

Contracts for gloves made of cotton simplex have been concluded recently with Canada and Egypt in spite of a general decrease of the demand for this type of gloves.

Export of 10 Million Metres of Cotton Fabric

801

In December last year, a contract was concluded with Bulgaria for the delivery of 2.5 million metres of poplins. Further deliveries by CENTROTEX include one million metres of the same material to the USSR and 500,000 metres to the German Democratic Republic. All these lots were shipped in 1958.

On the basis of previous contracts and those signed in December, 1958, six million metres of cotton fabric, mostly poplins, were shipped to Western countries. Larger quantities were exported to Finland, Sweden, the German Federal Republic, Iran, Turkey and Greece.

First Shoe Orders for 1959

802

In November and December, 1958, representatives of CENTROTEX discussed Czechoslovak shoe deliveries with many foreign customers. Preliminary orders so far received indicate that the rising trend of shoe exports noted in recent years will be maintained also in future. By the end of 1958 deliveries of 16,300,000 pairs of leather and rubber footwear were covered by contracts to be realized in 1959. About 25 % of this quantity will be delivered to Western countries. Largest lots were ordered by Socialist countries viz. the USSR (more than 10 million pairs), Poland (900,000 pairs) and the German Democratic Republic (about 600,000 pairs). Other buyers are Nigeria, Ghana, Iran and the Sudan.

**Interest in PRAGOEXPORT Products in Great Britain,
the U.S.S.R. and France**

803

The Grand Prix won by Czechoslovak wooden toys in Brussels has had a favourable influence on orders. In November PRAGOEXPORT concluded a contract with Great Britain — among other countries — to which it will send in December a variety of items valued at a total of 400,000 crowns.

This month Czechoslovakia will supply the Soviet Union with on million crowns' worth of sports goods, chiefly gloves, soccer balls, table-tennis bats and skis.

The first reaction to the new type of inflatable beach-chair which PRAGOEXPORT introduced on the market a few weeks ago has come from the U.S.A., which is interested in 1,000 of them. Other orders are expected.

Sports Requisites to the U.S.A. and German Federal Republic **804**

The new sample collections of PRAGOEXPORT produced inquiries from the U.S.A. for beach-balls and child's air-guns worth about US\$ 25,000. Delivery will be made by the end of May 1959. In December, 1958, commercial representatives from the German Federal Republic visited Czechoslovakia in order to buy air mattresses and other camping equipment, mainly tents. Conclusion of large orders is expected.

Rising Trend in Export of Leather Fancy Goods **805**

The successful exports of leather fancy goods continued also in 1958. Increase in recent years is shown by the following figures. PRAGOEXPORT deliveries of leather goods (bags, briefcases, ladies' handbags and small articles) to foreign countries amounted to Kčs 4.9 million in 1955, the corresponding figure for 1957 was Kčs 13.5 million, and last year 18.5 million. Largest customers are the Socialist countries, Switzerland, British West Africa, India, Ceylon, etc.

The Soviet Union was the largest buyer in 1958 with total purchases worth Kčs five million. Larger exports realized in November and December last year were: leather fancy goods for Kčs 300,000 to Switzerland and for Kčs 800,000 to Ghana and Nigeria.

Experience gained from previous sales has been used in the preparation of the new PRAGOEXPORT collections for the 1959 season.

28,000 Heads of Live Game to France

806

KOOSPOL started its seasonal exports of live game to old customers in November last year. The first larger consignments have been supplied to France whose hunting-grounds will be enriched by 28,000 partridges, hares and pheasants.

In 1959 further supplies will go to France, Italy and Federal Germany. Preliminary data indicate that 1958 exports surpassed those of 1957. Total exports of 1957 were 86,541 heads of partridges, hares, and pheasants.

Hops and Malt Sales

807

Great interest was shown in Czechoslovak hops and malt soon after the beginning of the new season as announced earlier (see reports No 653 and 654). According to latest reports the 1958 production is practically sold. Smaller quantities have been reserved for KOOSPOL's regular customers for purchases in the spring months of 1959.

Japan Buys Spirits

808

In December of last year KOOSPOL found a new market for spirits. Various products of the Czechoslovak liquor industry were delivered to Japan. The contract value amounted to Kčs 140,000.

TRANSPORT

Increased Goods Transport on the Danube

809

The Danube represents for Czechoslovakia an advantageous route to countries of the Danube valley as well as to the Levant via Black Sea ports. Further connections are established to the Middle East and Far East with Czechoslovak goods carried by her own sea-going vessels. The importance of the Danube for Czechoslovak foreign trade is apparent from the following table which shows the increasing trend of Czechoslovak transports passing through the river:

	1957	1958
Imports	542,914 tons	433,220 tons
Exports	299,074 tons	312,684 tons

London Exporters Interested in Czechoslovak Marine Transport

810

London exporters approached Čechofracht about the possibilities of freighters of the Czechoslovak "Red Star Line" calling at English ports. Only a small number of cargo-boats operates on the Continent—China route without calling at intermediate ports. The direct route shortens the trip and means a considerable reduction on c. i. f. basis. Ships of the Czechoslovak fleet belong to those running the direct Continent—China route.

Electrification of Railways

811

The electrification of Railways in Czechoslovakia started three years ago. Today there are 330 km fully electrified lines. This figure will increase to 1,100 km by 1962 when the greater part of the lines with heaviest traffic will be electrified. The Škoda Works in Plzeň reduced its production of the renowned steam locomotives and concentrated on the production of electric and Diesel-electric locomotives only.

The State Plan of railway development in Czechoslovakia foresees 70 % electric traction, and 30 % Diesel-electric and Diesel traction by 1970.

**Introduction of Telecommunication and Safety Equipment
on Railroads**

812

In the next four years further 30 railway stations of the Czechoslovak Railroads will be equipped with relay-operated safety equipment. 320 km of lines will be equipped with auto-blocks increasing safety of operation and enabling the simultaneous run of several trains on the same section of the railroad. 300 km of lines and 300 locomotives will receive line auto-stops and further 300 km of lines and 250 locomotives will be equipped with point auto-stops.

SCIENCE AND TECHNOLOGY

Raw Materials for Steroidal Hormones

813

Increasing importance is being attached to the clinical application of steroidal hormones produced synthetically. Certain vegetable substances provide the best suitable raw material for the production of these hormones. Basic research work on steroids in Czechoslovakia is concentrated in the Chemical Institute of the Czechoslovak Academy of Sciences, where problems of raw materials are also dealt with. Promising results are expected from the discovery by Dr. J. Fajkoš achieved in co-operation with Chinese experts during the visit of the former to China in 1958. Diosgenin, one of the basic raw materials for the production of steroidal hormones has been discovered in the Chinese *dioscorei*, a plant similar to anemones. Hitherto sources of this kind have been exploited in Mexico only. Two research workers, Ing. Lábler and Dr. Černý, succeeded in isolating a similar substance, solasodine, from a local plant which is an acclimatized type of nightshade, *Solanum aviculare*.

Excitometry: a New Diagnostic Method

814

Academician Vilém Laufberger discovered and worked out a new diagnostic method, called excitometry, in the Laboratory for graphical examination methods of the Czechoslovak Academy of Sciences. The new method enables a more exact measurement of the excitability of nerves and muscles, and supplies data required for the diagnosis of different diseases. The apparatus has been constructed according to up-to-date electronic concepts; it produces impulses lasting some millionths of a second only enabling a most accurate observation. The prototype and design drawings of the apparatus have been passed to the Development Workshops of the Czechoslovak Academy of Sciences in Praha, where further instruments will be constructed.

High-Pressure Precision Manometer

815

A precision manometer for high pressures based on the principle of compensated measurements of the cubical deformation of an elastic element has been developed in the Machine Research Institute of the Czechoslovak Academy of Sciences. Tests have proved that the method applied in the design ensured sensitivity, accuracy and stability. The apparatus is particularly suitable for measuring high pressures. At present this branch is being rapidly developed in Czechoslovakia. Hitherto instruments of this kind were imported mostly from the USSR, Poland, the German Democratic Republic, and also from the German Federal Republic and Switzerland. The prototype now under construction will cover pressure measurements up to 3,500 atm. It will be used by the Machine Research Institute for the investigation of properties of steam.

MISCELLANEOUS

Automobile Industry in Czechoslovakia

816

Production of passenger cars in Czechoslovakia has been increased annually. Number of cars produced are the following: 1953 — 7,300 cars; 1956 — 25,068; 1957 — 34,561; first 11 months of 1958 — 39,469 cars. For 1959 a total production of 50,300 cars has been planned.

Exports of passenger cars were: 1956 — 14,718 cars; 1957 — 15,858; 1958 (three quarters only) — 15,027 cars. Imports increased especially in the last two years from 5,620 in 1956 to 10,549 cars in 1957.

Applications for the purchase of cars are dealt with according to plan, and applicants are granted buying permits successively as supplies from increased home production and imports become available. A curious fact has been recorded in Czechoslovakia recently that many applicants for motor cars have withdrawn their applications because they wish to take part in the building of family houses or join the housing cooperatives for which their deposits in the savings-banks are needed. This phenomenon has shown a rising tendency especially during the last month. The intensive development of motorism in the last years has brought forward the problem of garage construction and improvement of roads. The growing number of car owners is a further proof of the increasing standard of living of the population. Total sales of cars on the home market were: 1955 — 1,682 cars; 1956 — 10,884; and 1957 — 20,447 cars.

The Czechoslovak Co-operative Corporation

817

On January 1, 1959, a new Czechoslovak co-operative corporation for import and export, UNICOOP, has opened its headquarters in Praha 3, Těšnov 5. It will act as intermediary for trade between co-operative organisations in Czechoslovakia and other countries. At the beginning of January UNICOOP will sponsor an independent exhibition of Czechoslovak products of co-operative societies in Budapest.

The UNICOOP replaces the former UERDE EXPORT.

Proposal of the Pakistan Co-operatives

818

UNICOOP, the export and import corporation of the Czechoslovak co-operatives has received a proposal from the Central Co-operative of Pakistan for the establishing of trade relations between both organizations. The Pakistan co-operatives are interested in the import of Czechoslovak agricultural machinery, e. g. ploughs, grain blowers, cutters, weeders for vegetables and vineyards. Further they want to buy spare parts for motor-cycles and bicycles.

In exchange for these goods they offer various raw materials, medicinal herbs and home made objects of art.

Products of Co-operatives in the Czechoslovak-GDR Trade

819

The recently concluded trade agreement between Czechoslovakia and the German Democratic Republic also includes products of Co-operatives. This is the first instance in the history of Czechoslovak co-operatives that the marketing of their products is incorporated in an agreement signed by the Government. Exports of Czechoslovak co-operatives will consist of furniture, kitchen equipment and ironmongery and will be realized by UNICOOP, Czechoslovak co-operative corporation for import and export. Imports from the GDR consist mainly of machinery and tools.

Czechoslovakia Favours Co-operation on the Lead and Zinc Market

820

A Czechoslovak delegation attended the UNO conference on the lead and zinc market situation held last year in Geneva. Czechoslovakia agreed with the formation of an International Group which would study market developments and examine suitable means for regulating the market. Expansion of trade without restrictive measures were the basis of Czechoslovak policy put forward with emphasis at the conference. The Czechoslovak delegation opposed the suggestion of export restrictions which would burden countries with less economical means of production and favour others, where production was artificially increased and protected by special precautions. Czechoslovakia wishes a just market regulation not only as an importing country, but also as an exporter of industrial products. Her customers are countries whose possibilities to import depend largely on their ability to export these metals.

Atlantic Crossing by Super Aero

821

The outstanding properties of the Czechoslovak four-seater plane produced in series were demonstrated by two exceptional flights in 1958. First was the flight across the Atlantic by Mr. Paolo Brielli who followed the Buenos Aires—Milano route. Second was the direct flight of two Super Aero planes from Czechoslovakia to Mongolia. The planes sold to Mongolia will be operated as aero-taxis.

Increase in Beer Consumption

822

In 1957 as much as 247 thousand hectolitres of beer were exported. In addition, the PILSNER URQUELL, Staropramen and Budvar are favourite long drinks in Czechoslovakia as illustrated by the beer sales and consumption figures from 1954 to 1957:

Sales of beer in thousands of hectolitres:

1954	. . . . .	9,802
1955	. . . . .	10,316
1956	. . . . .	10,951
1957	. . . . .	12,336

The average annual consumption of beer per capita shows the following trend:

1954	. . . . .	77.5 litres
1955	. . . . .	78.4 litres
1956	. . . . .	82.8 litres
1957	. . . . .	92.5 litres

The increased beer consumption has been reflected in a lower consumption of spirits 51,690 thousand litres of which were sold in 1955 as against 49,976 thousand litres in 1957.

The Chamber of Commerce of Czechoslovakia will gladly assist you in establishing trade relations with individual export and import corporations of the Czechoslovak foreign trade and help you in removing difficulties which may be encountered in this respect.



ADDRESS:

CHAMBER OF COMMERCE OF CZECHOSLOVAKIA,
13, UL. 28. ŘÍJNA, PRAHA 1

.....

Czechoslovakia at Fairs and Exhibitions Abroad

The Chamber of Commerce of Czechoslovakia is arranging Czechoslovak participation in the following international events held in the first half of 1959:

Leipzig	March 1—10	Paris	May 1—18
Johannesburg	March 17—30	Göteborg	May 2—10
Utrecht	March 18—27	Tokio	May 5—22
Milan	April 12—27	New York	May 8—19
Hanoi	April 19—May 10	Montreal	May 30—June 8
Casablanca	April 24—May 10	Barcelona	June 1—20
Hannover	April 28—May 7	Poznań	June 8—22
Tirana	May 1—20		

Press articles and pictorial material about the industry, trade, transport, technology, science or any other sector of the Czechoslovak national economy for free reproduction as well as publications will be gladly supplied on request by the **PRESS SERVICE**

Editorial and publishing office
13, Ulice 28. října, Praha I
Printed by the Knihtisk 03
15, Jungmannova, Praha II

Do you know that . . .

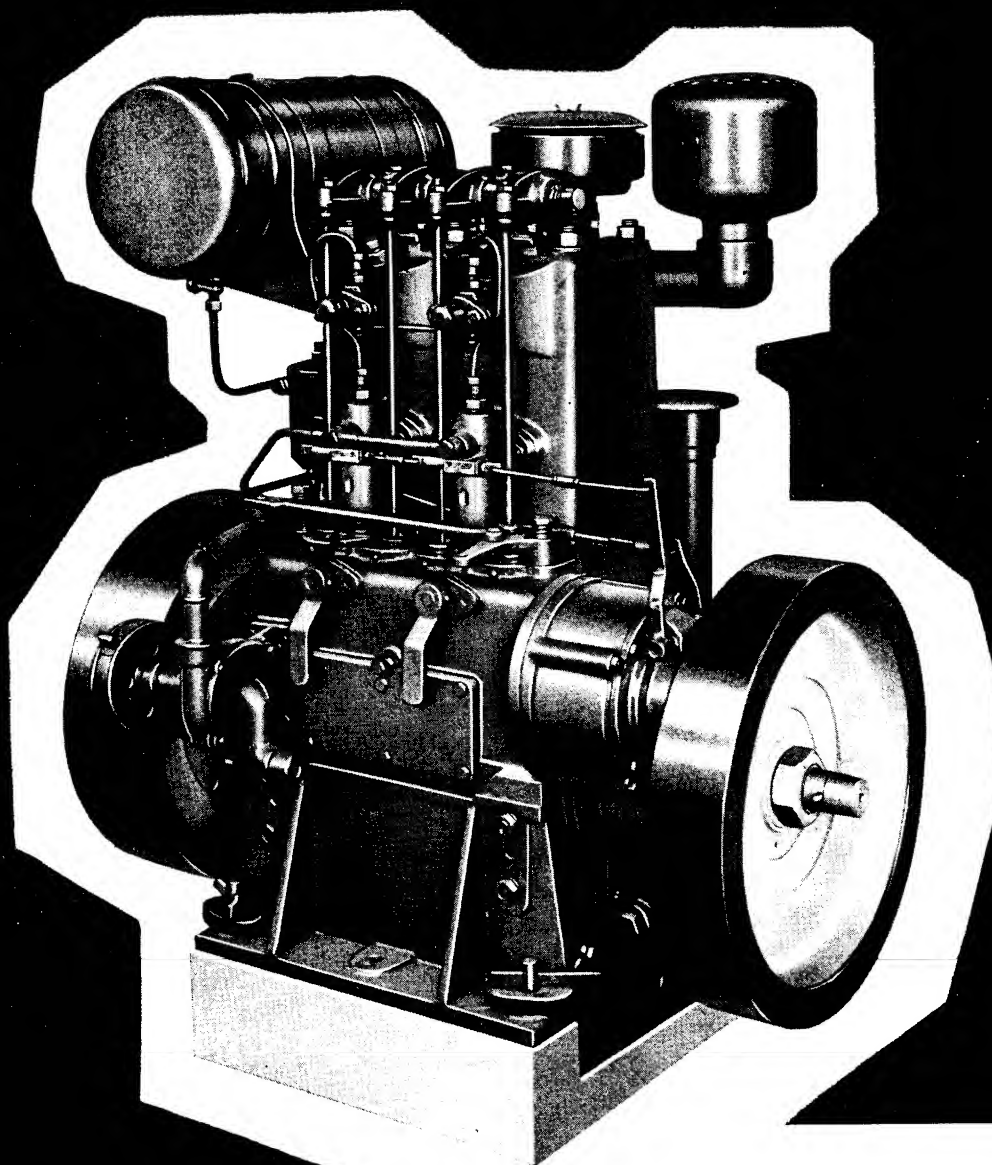
- Czechoslovak national economy is developing so rapidly that arrangements must be made for a further increase of the standard of living.
- Personal consumption in 1958 totalled about 13,000 million crowns, an increase of about 17 % compared with 1955. By 1960 the absolute increase against 1955 should reach the figure of Kčs 25,000 million.
- Average earnings of industrial workers are increasing continuously. Since 1954 wages have increased by Kčs 3,000 million (14 %), and average monthly income has increased by Kčs 57 (4.6 %).
- The average monthly income of industrial workers in 1960 will be increased by about 7 % of the expected 1958 results i. e. by Kčs 100 monthly.
- Family allowances amounting to Kčs 270 million are paid monthly to 1,576,000 employees, i. e. monthly average of Kčs 175. An increase of family allowances to the extent of Kčs 500 million annually, paid from State funds, is being prepared.
- 200,000 more women will be employed in 1975 according to the perspective plan of labour distribution. This will cause a further increase in the standard of living especially for families with 1—2 children. The establishment of further nurseries, kindergartens, and school clubs is also being planned.
- Two million citizens receive pensions in Czechoslovakia. Total pensions paid in 1958 amounted to Kčs 9,800 million (pensions paid in 1948 were only Kčs 4,700 million). An increase of pension for some 125,000 worker-pensioners is under consideration.
- 455,000 new flats were constructed in the years 1945—1957. A further 1,200,000 new comfortable flats are planned for the period 1958—1970. These new flats should basically solve the housing problem in Czechoslovakia.

25X1

Page Denied

Next 1 Page(s) In Document Denied

STROJEXPORT



Slavia

DIESEL

Motores Rápidos „Slavia“

Tipos	DR 27
CILINDROS	2
POTENCIA	
1500 rpm	27 HP
1000 rpm	18 HP
TALADRADO	115 mm
CARRERA	150 mm
PESO NETO	490 kg
PESO BRUTO	590 kg
EMBALAJE	
MARITIMO	1.35 m ³

MOTOR DIESEL RÁPIDO SLAVIA DR 27

Los motores Diesel rápidos Slavia poseen gran estabilidad, son de construcción vertical, de cuatro tiempos y con inyección de combustible en la antecámara. Esta especial ejecución permite una menor presión de inyección e inflamación, fácil arranque incluso con tiempo frío y reducido consumo de combustible. Casi todas las piezas en movimiento están completamente cubiertas y por ello se encuentran al abrigo del polvo y la suciedad. Estos motores se destinan al accionamiento de las más diversas máquinas agrícolas e industriales, bombas de agua y generadores.

Caja del motor

Está formada por una sola pieza de fundición, provista de tapas laterales y fondo desmontable; en éste se pueden ver aletas para la refrigeración del aceite. La caja lleva cojinetes cambiables de metal especial de cojinetes para sostener el cigüeñal. En la caja se encuentran los mecanismos de distribución y lubricación y su parte inferior forma el depósito de aceite.

El cilindro

Es un suplemento cambiabile de fundición especial. Encima de él se encuentra la culata con las válvulas de aspiración y escape, el soporte con los elementos de arranque y la válvula de inyección.

Émbolo

Es de aleación de aluminio y posee tres segmentos de émbolo y dos arandelas-estopas. El perno del émbolo está alojado en el émbolo y es solidario con él.

Bielas

Tiene un cojinete de dos piezas para el perno de la manivela; este cojinete es de metal especial fundido. El cojinete del perno del émbolo es de bronce y se engrasa con el aceite salpicado.

Cigüeñal

Es de acero forjado de calidad y sus pernos pulimentados se alojan en dos cojinetes de frotamiento.

Válvulas

Las de aspiración y escape son de acero especial resistente a las altas temperaturas. Las válvulas se accionan por palancas y varillas mandadas por el árbol de distribución, al que el cigüeñal transmite su movimiento por medio de ruedas dentadas. Estas, así como el árbol de distribución y las levas, se encuentran en la caja del motor, siendo engrasadas con las salpicaduras del aceite; las palancas están engrasadas con grasa.

Bomba de inyección

Inyecta combustible en la antecámara a través de la válvula de inyección. La cantidad de combustible se regula exactamente.

Regulador

Es de velocidad y al regular la cantidad de combustible inyectado en la antecámara, mantiene constantes las revoluciones del motor. Las revoluciones y potencia del motor se pueden regular apretando o aflojando los resortes de regulación. Con la palanca de regulación a mano se pueden cambiar las revoluciones en forma continua.

Refrigeración por agua

Puede ser por corriente, por circulación o con radiador de auto. La bomba de agua está montada directamente sobre la caja del motor y es accionada por una correa achaflanada. El consumo de agua (refrigeración por corriente) es de 20 litros por CV/hora, siendo de 15° C la temperatura del agua a la entrada. Los motores con radiador de auto se entregan sólo sobre pedido especial.

Lubricación

Es a presión en los cojinetes principales de las bielas, empleándose una bomba dentada que aspira el aceite del fondo de la caja del motor a través de un filtro. La bomba de lubricación posee una válvula de seguridad que se puede ajustar a la presión prescrita. La presión del aceite se controla con un manómetro. El perno del émbolo y la distribución se engrasan con aceite salpicado. El consumo de aceite a plena carga es de unos 5 g/CV/hora.

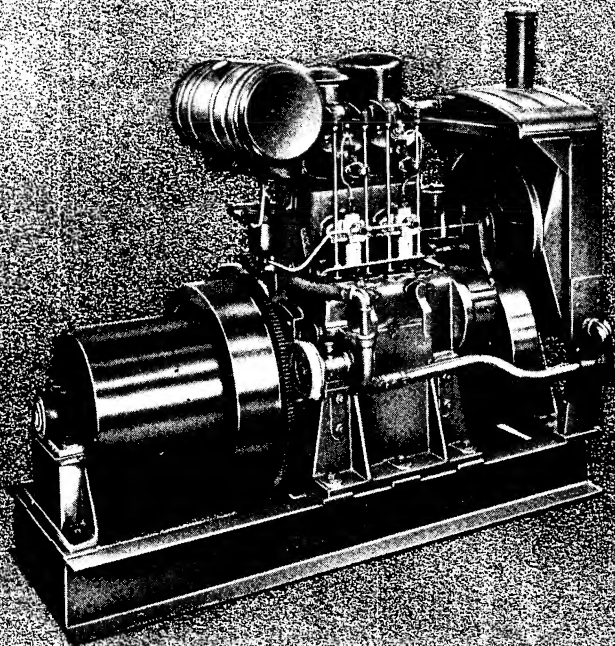
Rendimiento

Las potencias indicadas en la tabla de la portada se entienden para las revoluciones nominales y una jornada de 12 horas de trabajo.

El motor puede estar sobrecargado en un 10% durante una hora y en un 20% durante un minuto.

Estos rendimientos fueron establecidos a una presión barométrica de 749 mm col. de merc., temperatura del ambiente 29,4° C y humedad del aire que responde a una presión de vapor de 15 mm. Si la máquina debe trabajar bajo otras condiciones, cambian los rendimientos de la siguiente manera:

- a) a cada variación de la presión barométrica de 6,35 mm col. de merc. aumenta o disminuye la potencia en 1%.
- b) a cada aumento de la temperatura del aire ambiente de 2,8° C la potencia del motor baja en 1%.
- c) si la humedad del aire aumenta, es decir rebasando los 15 mm col. de mercurio, la potencia del motor pierde 1% por cada 6,35 mm col. de mercurio de aumento de la presión de vapor.



DATOS TÉCNICOS

Tipo de motor		Slavia DR 27
Número de cilindros		2
Potencia permanente HP	a 1500 rpm	27
	a 1000 rpm	18
Taladrado	mm	115
Carrera	mm	150
Cilindrada	cm ³	3120
* Consumo de combustible	g/CV/hora	205
Tubería de escape	pulgadas	2 1/2

*) El consumo de combustible de 10.000 Cal/kg es el siguiente a plena carga y en condiciones normales de servicio que se garantizan con una tolerancia de $\pm 5\%$.

PESOS

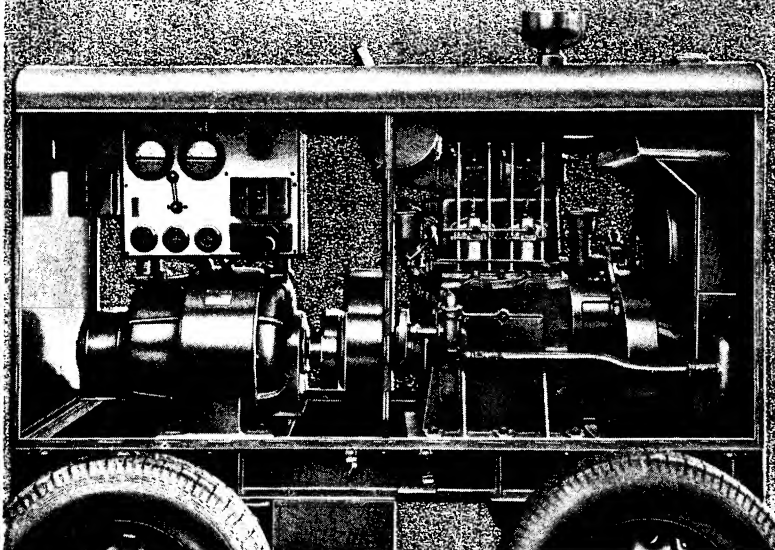
Peso de los motores de ejecución normal y con accesorios normales:

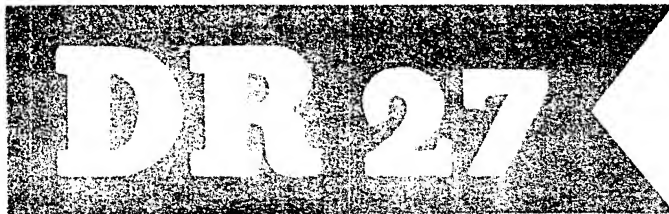
Tipo de motor	Motor neto kg	Embalaje marítimo kg	Motor bruto kg	Volumen del embalaje marítimo kg
Slavia DR 27	490	100	590	1,35

VOLANTES

Se entregan normalmente de las siguientes dimensiones:

Tipo de motor	Número de ruedas volantes	Diámetro ancho en mm	Momento de inercia a 1500 rpm KG ² en kgm ²	Grado de irregularidad a 1500 rpm
Slavia DR 27	1	480/85	18,5	1:90
	1	480/130		





Polea

Con los motores Slavia tipo DR 27 sólo entregamos poleas en caso de pedido especial, siendo necesario encargar al mismo tiempo un árbol de prolongación, cojinete exterior y marco soldado.

Accesorios especiales que se entregan sobre demanda y con aumento de precio

radiador de auto con ventilador e impulsión - marco de base para el motor y el radiador de auto, árbol de prolongación, poleas, cojinete exterior y marco soldado.

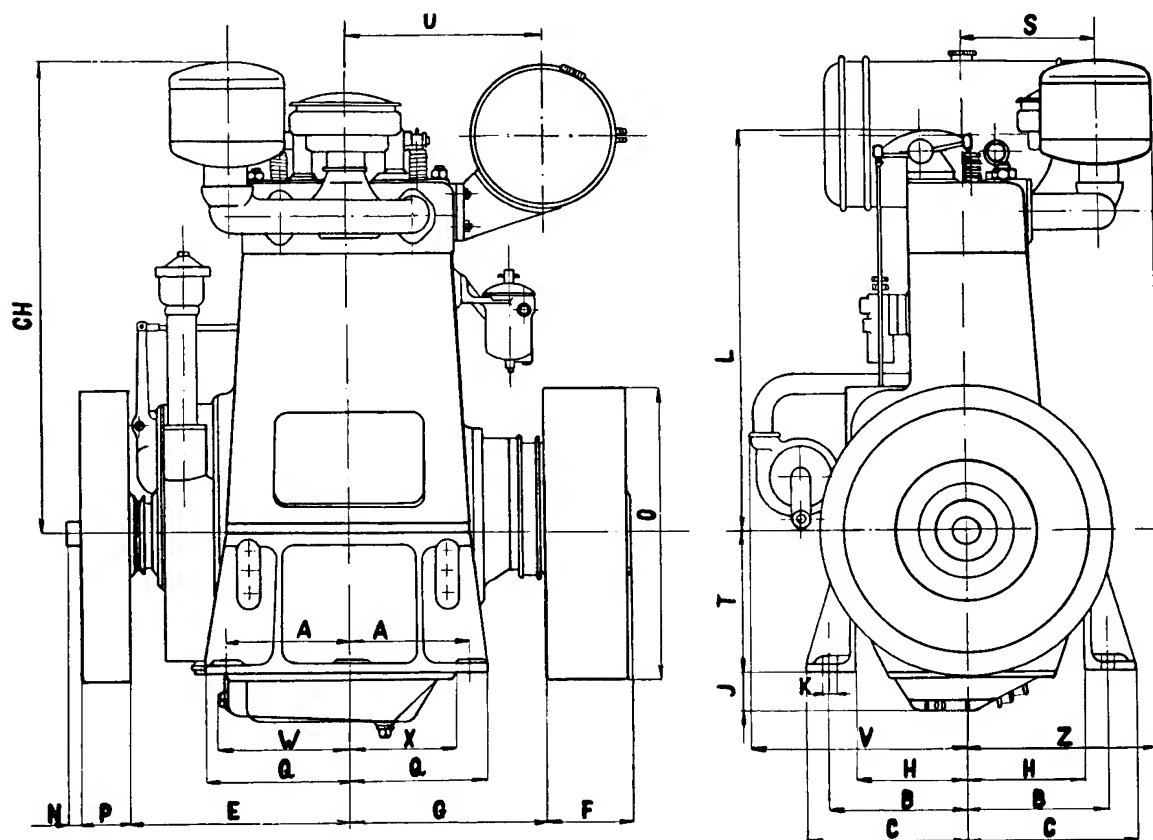
Slavia DR 27

Equipo normal de los motores

- 2 volantes
- 1 depósito de combustible para 8 horas de servicio, con tuberías
- 1 filtro de combustible
- 1 manivela

Accesorios normales

- 1 juego de piezas de recambio
- 1 juego de llaves y herramientas
- 1 aceitera
- 4 tornillos de base
- 1 manual de instrucciones



	A	B	C	E	F	G	H	CH	J	K	L	N	O	P	S	T	U	V	Z
mm	200	227	260	345	130	320	180	780	110	18	670	32	480	85	200	225	305	350	310

Queda reservado el derecho de cambiar los datos técnicos

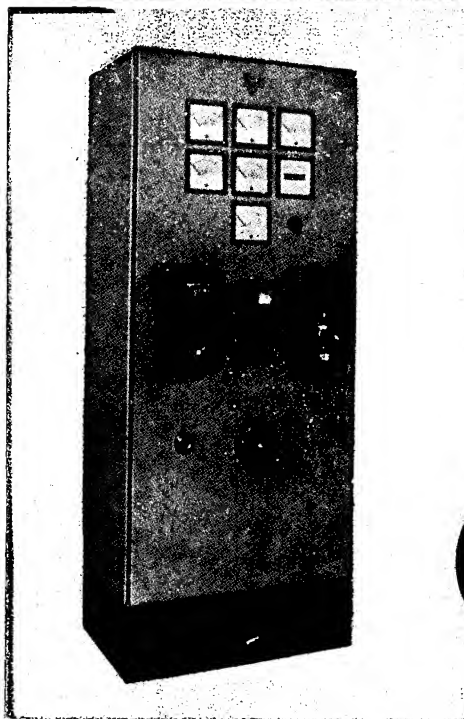
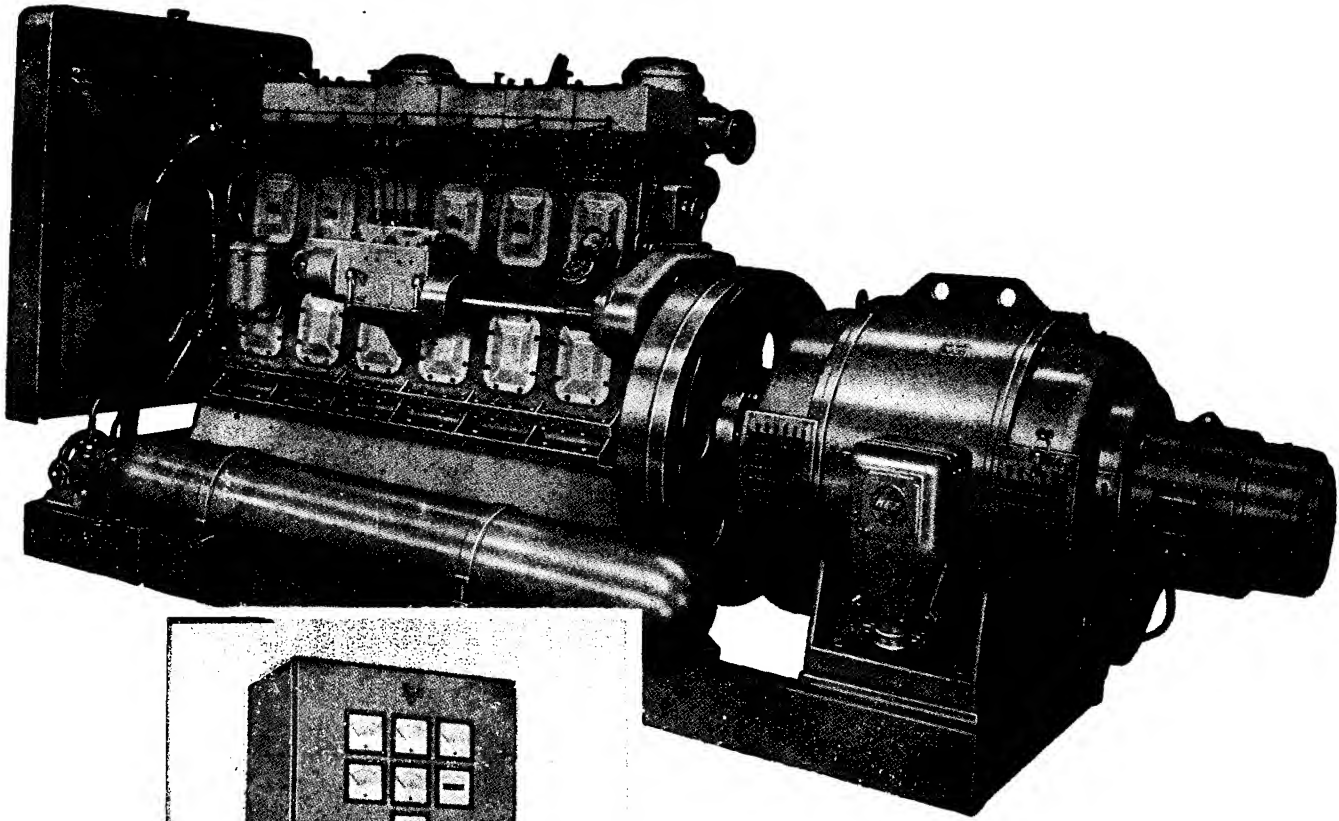


P R A H A - C H E C O S L O V A Q U I A

STROJEXPORT

Stationary Engines, Types 4 to 8 S 160

Marine Engines, Types 4 to 6 L 160



ŠKODA

ŠKODA DIESEL ENGINES

Bore 160 mm (6 19/64")
Stroke 225 mm (8 55/65")

T Y P E Š K O D A	STATIONARY ENGINES			MARINE ENGINES	
	4 S 160	6 S 160	8 S 160	4 L 160	6 L 160
Number of cylinders	4	6	8	4	6
Output in HP at 750 r. p. m. (22.5 HP per cylinder)	90	135	180	90	135
Weight of engine kg/lbs net	2250/4950	2900/6400	3400/7500	2050/4500	2820/6300
with standard equipment kg/lbs gross	2900/6400	3700/8150	4300/9500	2600/5750	3600/8000
Volume of seaworthy packing case in cubic metres/cubic feet	5.8/205	6.6/335	7.9/280	5.8/205	6.6/335

ŠKODA vertical, four-stroke, solid injection Diesel engines. The crankshaft assembly, camshaft as well as camshaft and valve drive are completely enclosed, yet easily accessible. The engine consists of the crankcase, cylinder block and cylinder heads. The sturdy crankcase is made of high grade cast iron. The lower part of the crankcase contains the main bearings the shells of which are lined with high grade white metall. The shims between the split bearing shells afford an adjustment of the necessary play between the shells and the crankshaft journals. The bearing at the flywheel end is designed as a guide bearing and carries the thrust of the helical gears driving the camshaft.

The CYLINDER BLOCK is made in one piece and screwed to the crankcase. The easily exchangeable water cooled cast iron cylinder liners are fitted inside the cylinder block. A double rubber seal on the lower part of the liner separates the water space from the crankcase.

The CYLINDER HEADS, which cover the top of each cylinder separately, are made of close grain cast iron and are hydraulically tested. Each cylinder head carries 1 inlet valve, 1 exhaust valve, 1 multiple-hole nozzle with pin arranged in the center and 1 starting valve. The shape of the combustion chamber ensures perfect combustion of the fuel at any output and speed of the engine within normal limits.

The wear resisting PISTONS made of light weight alloy are provided with 4 compression and 2 scraper rings, the former being fitted above, the latter below the gudgeon pin. The hollow floating gudgeon pin is hardened, accurately ground and held in position by two circlips.

The drop-forged CONNECTING RODS are provided with drilled channels for the oil lubricating of the gudgeon pins. The big end bearing of generous dimensions is provided with shims for the adjustment of the bearing play. The top half of the steel bearing shell is lined with a thin layer of lead bronze, the bottom half with white bearing metal.

The CRANKSHAFT which is of ample size, is forged of high grade carbon steel and accurately machined. The crankshafts of 4-cylinder engines are provided with balancing weights to reduce the bearing pressure and damp vibrations during idling. The lubricating oil flows under pressure through channels drilled in the crankshaft from the main journals of the connecting rod to the crankpins. A flywheel keeps the cyclic irregularity of the engine down to the specified figure.

The INLET AND EXHAUST VALVES are pressed of heat and corrosion resisting steel and are provided with cast iron guides. The valves are operated by push rods actuated by the camshaft. The clearance between the valve and rocker arm can be adjusted by means of an adjusting screw. The cams and journals of the camshaft are hardened and accurately ground. All moving parts of the engine are lubricated with pressure oil.

The FUEL INJECTION EQUIPMENT consists of a multi-cylinder fuel injection pump, a separate element of the pump being used for each cylinder and delivering an accurately measured quantity of fuel to the fuel injection nozzle. The quantity of fuel supplied can be varied by rotating the piston of the fuel injection pump by means of a control rack. The piston is provided with a helical groove which fixes the beginning and end of the pressure stroke at various positions of the piston. The fuel injection nozzles open under the pressure of the fuel injected through them into the combustion chamber. All moving parts of the fuel injection equipment are easy to exchange.

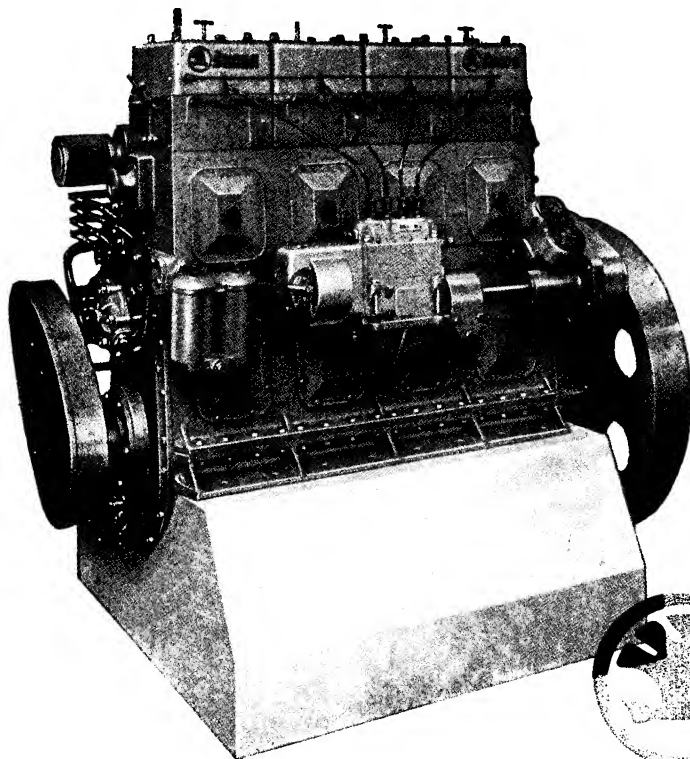
A CENTRIFUGAL GOVERNOR, which is driven by the camshaft of the fuel injection pump and attached to the flange of the pump, controls the speed of the engine. The tension of the governor springs can be varied by hand by means of a hand lever during operation. This varies the speed of the engine. Type S 160 stationary engines are equipped with governors which maintain a constant speed within 5% limits. The set speed can be altered by changing the governor springs and altering the fuel injection advance. Type L 160 marine engines are equipped with governors which permit the speed to be varied during operation within a wide range, i. e. from 750 to 200 r. p. m.

LUBRICATION. The circulating pressure oil lubricating system ensures the supply of ample quantities of lubricating oil to all moving parts of the engine. A gear type oil pump driven by the crankshaft through a gear draws the oil from the sump in the crankcase through an oil cleaner and delivers it to the main oil pipe and through it to the main bearings, the camshaft bearings and the valve push rods. The used oil returns to the sump in the crankcase. A control valve affords an adjustment and an oil pressure gauge a check of the oil pressure. The lubricating oil consumption is 3 to 4 grams (0.0066 to 0.0088 lbs.) per HP hour at 100% load.

COOLING. The engine can either be cooled by running fresh water or by circulating water. A centrifugal cooling water pump is included in the supply of the engine. A motor car type radiator and fan may also be supplied to special order if required. The cooling water consumption is about 15 litres (3.3 Imp. Gallons) per HP hour with the cooling water temperature assumed to be 15° C (59° F).

COMPRESSED AIR STARTING. The air supplied from the compressed air bottle to the distributor is admitted to the individual cylinder in accordance with the firing order of the engine. The compressed air bottles can be charged directly by the engine. For that purpose the head of the first cylinder is fitted with a charging valve. A two-stage hand compressor serving as a stand-by for hand charging of compressed air bottles may be supplied against extra charge.

THE SUPPLY OF THE ENGINE INCLUDES (unless specified otherwise in the tender): 1 standard flywheel, 1 fuel tank for 8 hours' operation with oil cleaner, stop valve and 3 metres (10') of fuel feed pipe, 1 thermometer for cooling water, 1 oil pressure gauge, 1 compressed air bottle (capacity approx. 75 litres or 16.5 Imp. Gallons for 4-cylinder engines, 100 litres or 22 Imp. Gallons for 6 and 8 cylinder engines), 3 metres (10') each of compressed air starting and bottle charging pipe, 1 set of spanners and tools and the following spare parts: 1 set of important springs, 1 set of gaskets and piston rings.



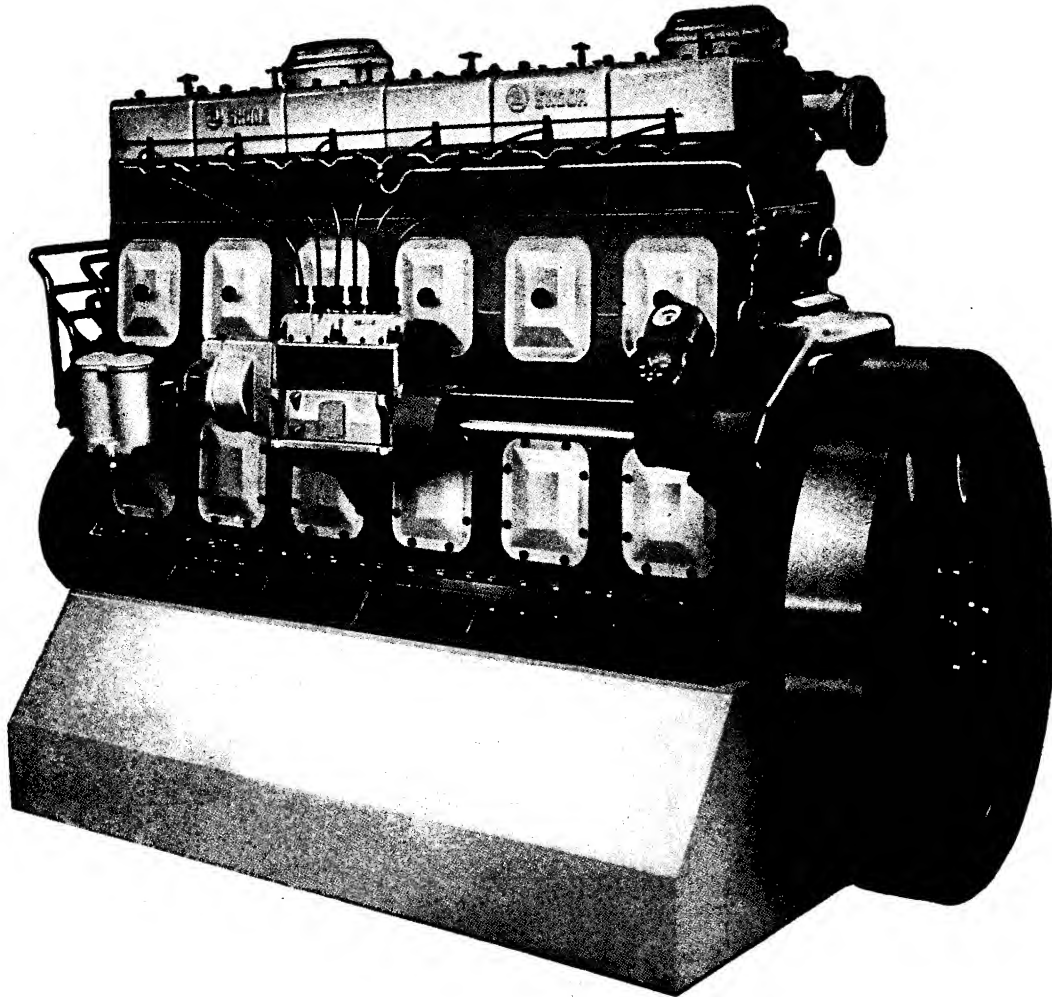
Type 4 S 160 Diesel Engine of Standard Design



ŠKODA

STROJEXPORT

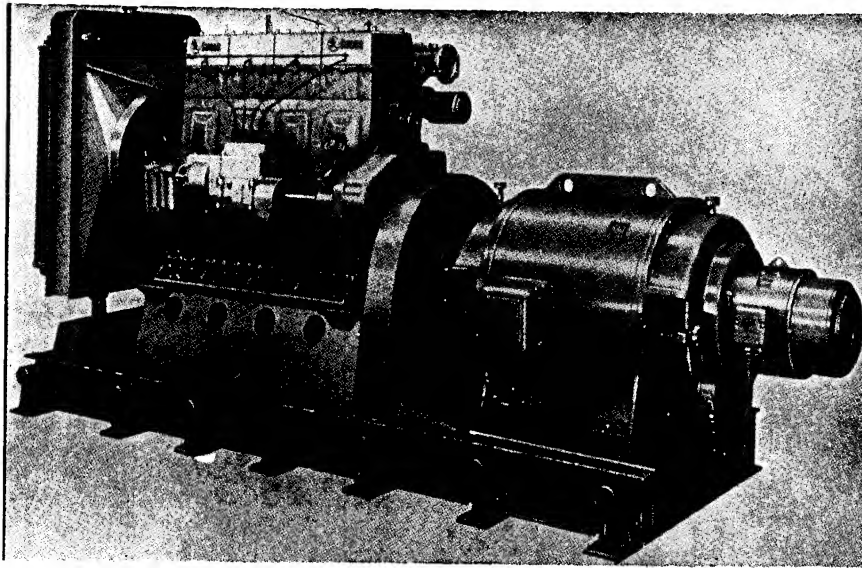
Type 6 S 160 Diesel Engine of Standard Design



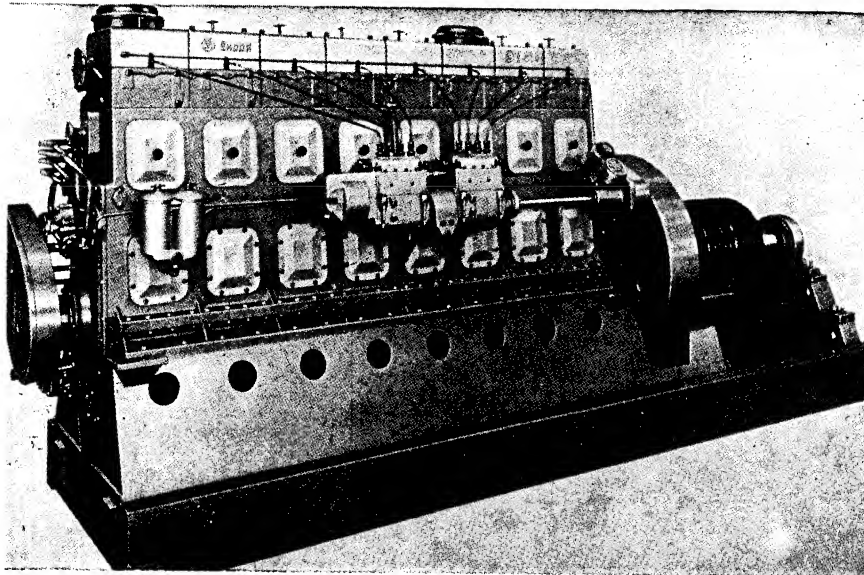
Guaranteed fuel consumption	grams per HP hour	lbs. per HP hour
At 100% load	180	0.397
At 75% load	190	0.419
At 50% load	210	0.462

FUEL CONSUMPTION:

The fuel consumption figures stated above are subject to a permissible deviation of 5% and apply for an air temperature of 29.4° C (85° F), a barometric pressure of 749 mm (29 1/2") of mercury column and fuel with a minimum calorific value of 10 750 kcal per kg (19 350 B. T. U. per lb.).



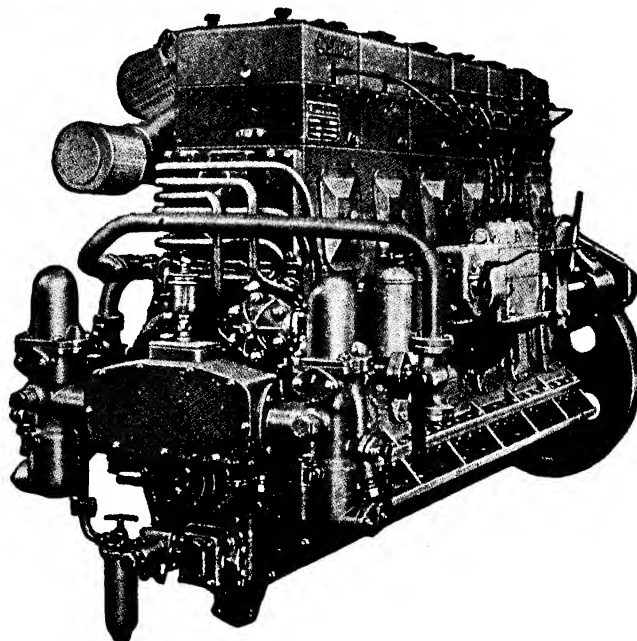
*Škoda Diesel Set, 75 kVA, with
Type 4 S 160 Engine, 90 HP,
750 r.p.m., with Motor-Vehicle
Type Radiator, Spring Mounted.*



*Type 8 S 160 Diesel Engine,
180 HP, 750 r. p. m., with Vee-
Belt Pulley and Extended Shaft*



*Type 6 L 160 Marine Diesel Engine with Double-
Piston Water Pump, Output 135 HP, 750 r.p.m.*



The following special equipment is available against extra charge:

Common bed plate for engine and generator.

Welded bed plate for engine and motor type radiator.

Welded bed plate for engine with extended shaft and outside bearing.

Standard belt pulley.

Hand compressor for charging of compressed air bottles with 3 metres (10') of pipe.

Motor car type radiator with fan and fan drive.

Oil cooler.

Exhaust silencer.

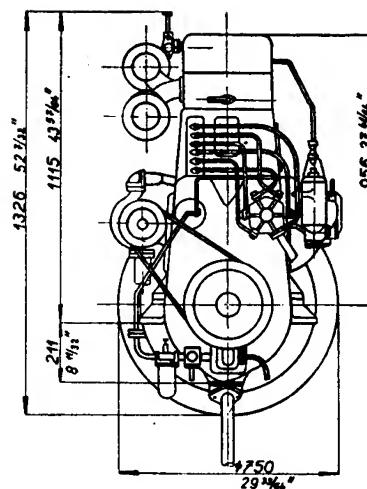
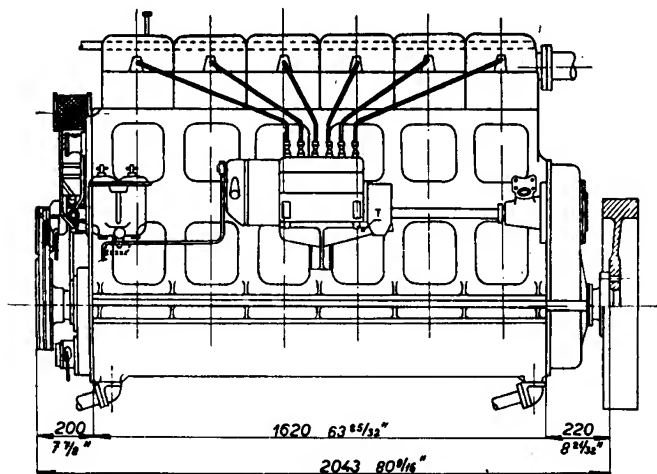
Semi-rotary pump for filling of fuel tank.

N O T E :

Customers are requested to obtain from us the foundation drawing before the beginning of the erection.

We reserve ourselves the right to carry out alterations in design and improvements.

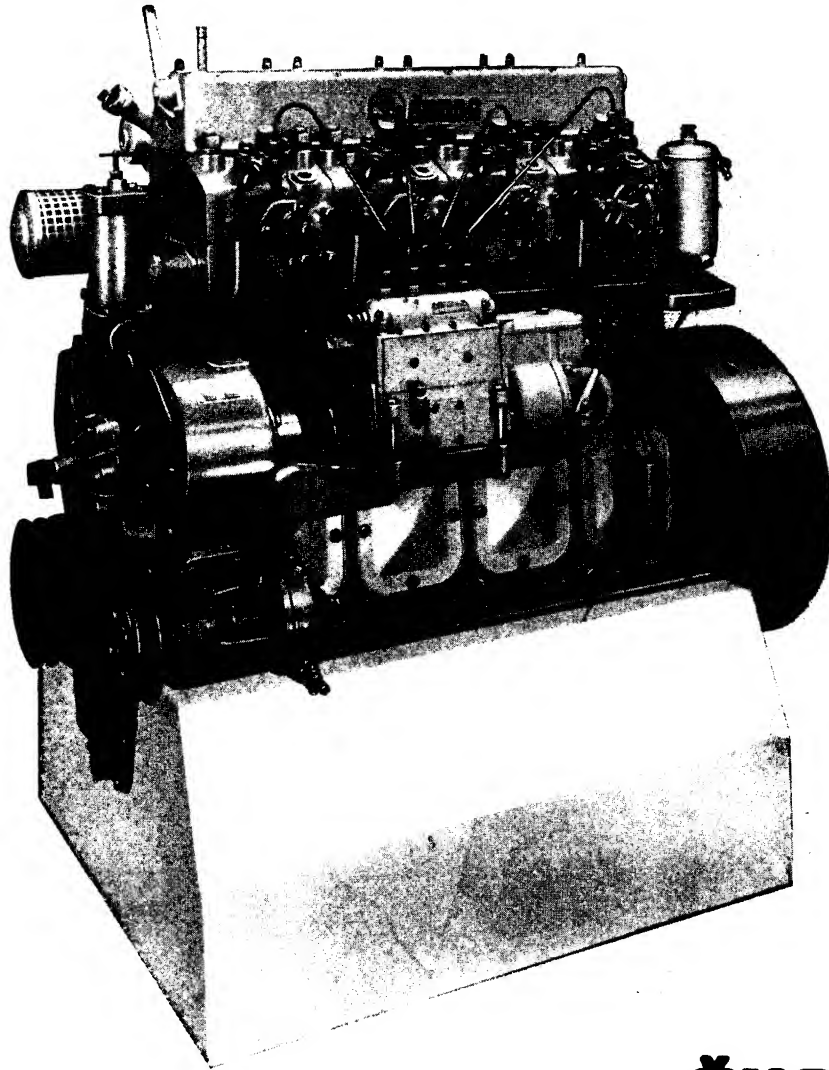
The illustrations, weights and dimensions are therefore not binding.



STROJEXPORT

P R A H A - C Z E C H O S L O V A K I A

STROJEXPORT



ŠKODA

MOTORES DIESEL INDUSTRIALES

IGNICIÓN POR COMPRESIÓN ARRANQUE EN FRÍO MOTORES DE 4 TIEMPOS

Tipo S 110	
Potencia	20—90 HP
Número de cilindros	2—6
Alesaje	110 mm
Carretera	150 mm
Régimen nominal	1000 o 1500 rpm

MOTORES DIESEL INDUSTRIALES

Tipo	Número de cilindros	Potencia nominal a		Arranque	Peso del motor con su equipo kg		Volumen de em- barque m ³
		1000 rev./min.	1500 HP		neto	bruto	
SKODA 2S110	2	20	30	a mano	567	720	1,3
				neumático	645	800	
				eléctrico	680	835	
SKODA 3S110	3	30	45	a mano	690	875	2,0
				neumático	765	950	
				eléctrico	805	990	
SKODA 4S110	4	40	60	neumático	825	1050	2,3
				eléctrico	865	1085	
SKODA 6S110	6	60	90	neumático	1155	1435	2,9
				eléctrico	1170	1450	

La construcción de los motores Diesel Škoda S110 representa el fruto de unas experiencias de muchos años en la fabricación y funcionamiento de los motores de aceite pesado. Gracias al empleo de materias primas de primer orden, a una elaboración perfecta y los más modernos procedimientos empleados en los talleres. Škoda que gozan de una reputación mundial, estos motores descuellan por su marcha segura y su larga vida, dando excelentes resultados bajo condiciones de servicio las más difíciles en todas partes del mundo.

CARTER

Consiste en dos piezas. La parte superior, de fundición, lleva los cojinetes principales y encierra las camisas de los cilindros refrigeradas por agua. La parte inferior, igualmente de fundición, con su superficie nervurada, sirve de recipiente para el aceite de engrase debidamente refrigerado.

ARBOL CIGÜEÑAL

El árbol cigüeñal, suministrado por los talleres siderúrgicos ŠKODA o POLDI, está forjado de acero de la mejor calidad. Los casquillos de acero de los cojinetes principales están colados con una película de metal antifricción.

BIELAS

Son de perfil H, forjadas. El cojinete de biela compuesto de dos piezas tiene la parte superior del casquillo revestida de bronce al plomo, y la parte inferior colada con metal blanco. El casquillo de la cabeza pequeña de biela es de bronce fosforoso y consiste en una sola pieza.

PISTONES

Son de una aleación de metales ligeros. Cada pistón tiene 4 aros obturadores y 2 aros, rascadores de aceite. Los gorriones de los pistones son huecos, flotantes, fabricados de acero de óptima calidad, cementado, templado y rectificado.

CULATA

En la culata están dispuestas las válvulas intercambiables de aspiración y de escape, accionadas por las levas del árbol de distribución, mediante bctadores, varillas y balancines. El árbol de levas recibe el movimiento de árbol principal por medio de engranajes de dientes oblicuos. El espacio de compresión de la culata comprende una cámara de torbellino, en la cual se inyecta el combustible por una tobera (gicleur). La forma perfeccionada de la cámara de combustión facilita una buena mezcla del combustible pulverizado con el aire comprimido, y con eso una combustión impecable del carburante, asegurando un consumo muy económico.

BOMBA DE INYECCION

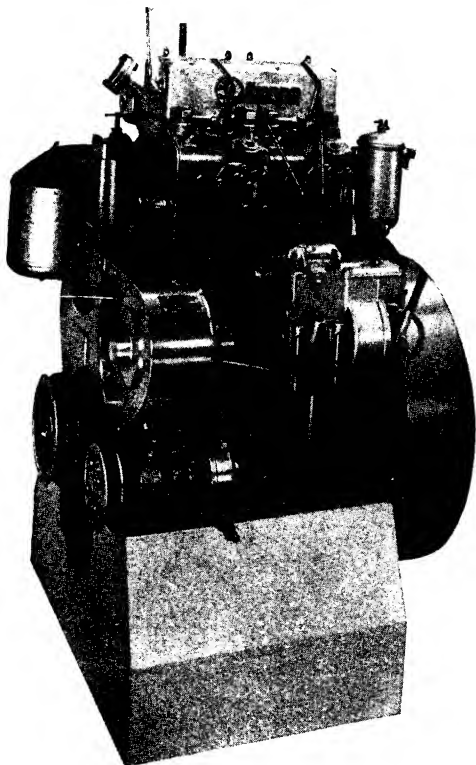
Esta bomba es de construcción de bloque, comprendiendo un elemento de inyección para cada cilindro. El pistón de cada uno de estos elementos posee una ranura especial, de forma espiral, que gira con ayuda del regulador, para determinar el fin de la inyección de combustible. El principio de la inyección es constante, siendo ajustado a base de las pruebas verificadas en la fábrica productora.

REGULADOR CENTRIFUGO

Según el fin a que será destinado el motor, la fábrica monta en el regulador de la bomba de inyección, los siguientes resortes:

1. resortes para el régimen constante del motor de 1000, 1200 o 1500 rpm.
 2. resortes para el régimen variable del motor entre las 400 y las 1500 rev./min. o 400 y 1000 rev./min.
- En el primer caso estos resortes mantienen un régimen constante, necesario para los generadores de corriente eléctrica, las bombas y máquinas similares. El régimen de estos motores puede modificarse únicamente cambiando los resortes. En el segundo caso estos resortes permiten una regulación fluente y una reducción de la velocidad del régimen nominal hasta las 400 rev./min. con ayuda de una palanca de mano, aunque el motor esté en plena marcha. Esta regulación variable se presta para máquinas cuya velocidad varía, por ejemplo las dragas, los rodillos compresores para apisonar caminos y carreteras, desenrolladoras etc.

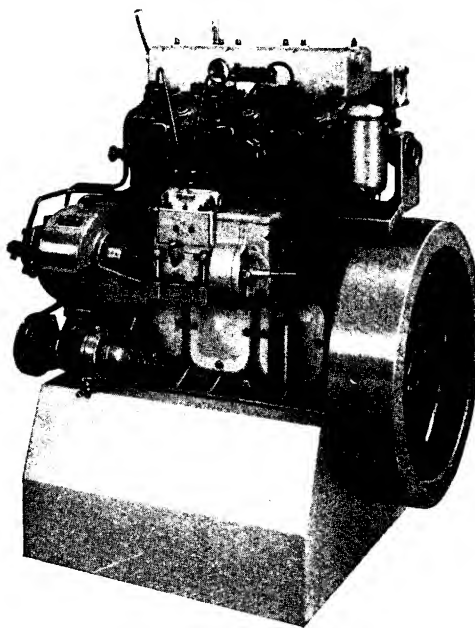
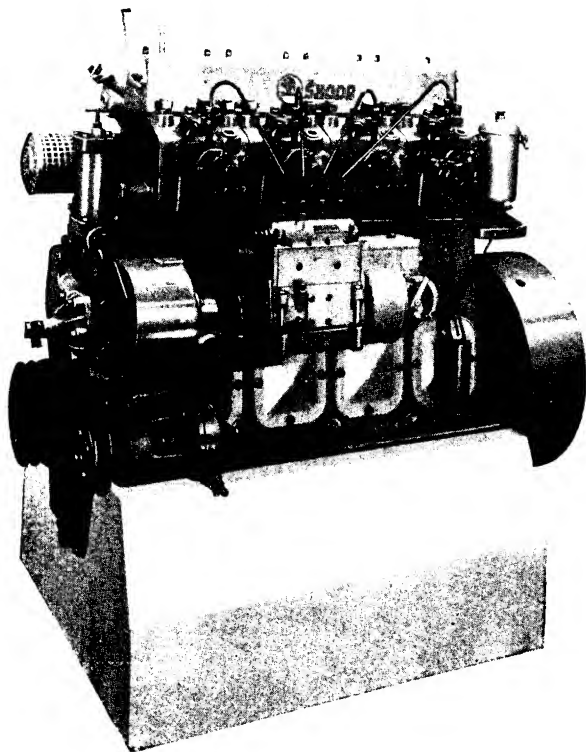
Rogamos se indique en los pedidos el ajuste, los resortes solicitados y el régimen nominal.



VARIOS EJEMPLOS DE EJECUCIONES DE LOS MOTORES ŠKODA DIESEL

Motor Skoda-Diesel 2S110 con arranque
a mano, modelo normal.

Motor Skoda-Diesel 3S110 modelo normal.



Motor Skoda-Diesel 4S110 con arranque
eléctrico, modelo normal.

Para la ejecución normal de los motores Škoda-Diesel 4S110
con arranque neumático, véase la primera página (portada).

LUBRIFICACION

La lubricación es forzada, siendo producida la presión necesaria por una bomba de engranajes, que aspira el aceite a través de un filtro grosero desde el recipiente formado por la parte inferior del cárter, presionándolo a través de un filtro de láminas hacia los diversos puntos de engrase. La presión del aceite puede ser controlada por un manómetro y regulada con ayuda de una válvula de reducción. El depurador de aceite puede ser limpiado incluso estando la máquina en plena marcha. A pedido especial y sobre un recargo del precio los motores pueden ser dotados de un refrigerante del aceite lubricante. Se recomienda este último únicamente para los países cálidos.

REFRIGERACION

Los motores de tipo normal son refrigerados por agua corriente suministrada por una bomba, o bien de otra fuente, siendo impelida a los espacios y canales refrigeradores de los cilindros, pasando después a la culata de donde sale afuera. La refrigeración por circulación de agua mediante un radiador de tipo automóvil con ventilador, únicamente se entrega a pedido especial y recargo de precio.

PUESTA EN MARCHA

Los motores S110 pueden ser suministrados con los arranques según esta tabla:

El arranque neumático se obtiene con ayuda del aire comprimido suministrado por un botellón de aire, mediante un robinete de arranque, un distribuidor y una válvula de arranque montada sobre la culata. El botellón se carga con ayuda de una válvula de carga dispuesta sobre la culata del último cilindro, el cual hace en tal caso las veces de compresor, quedando cortada la afluencia del carburante a la válvula de inyección. El arranque eléctrico es efectuado mediante un starter comando por un engranaje sobre el volante y alimentado por corriente eléctrica de una batería. La batería se recarga automáticamente mediante una dinamo montada sobre el motor. Rogamos se indique en los pedidos la manera de arranque exigida.

Puesta en marcha	manual	neumática	eléctrica
Tipo del motor SKODA	2S110r 3S110r	2S110v 3S110v 4S110v 6S110v	2S110e 3S110e 4S110e 6S110e

ESPECIFICACION

TIPO

Motor Škoda-Diesel vertical S110, de 4 tiempos, inyección indirecta fija, aspiración normal y lubricación forzada (bajo presión).

NORMAS

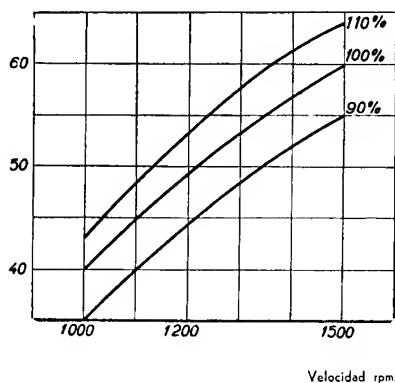
ČSN (BSS 649/1949)

POTENCIA

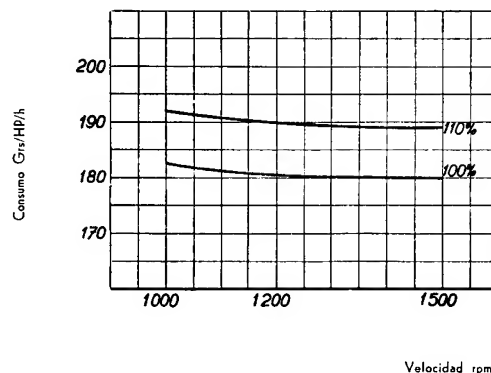
Las potencias nominales, indicadas en la tabla de la página 1, se entienden para los regimenes nominales, a un servicio de 12 horas. Sobrecargas posibles: 10% durante una hora, 20% durante 1 minuto. Las potencias nominales indicadas se entienden a una presión atmosférica de 749 mm/Hg, temperatura en la sala máquinas de 29.4° C, humedad del aire que corresponde a una presión del vapor de 15 mm/Hg. Potencia permanente para una duración de más de 24 horas consecutivas: 90% de la potencia nominal. Si el motor debe trabajar bajo condiciones distintas de las indicadas, las potencias cambian de la manera siguiente:

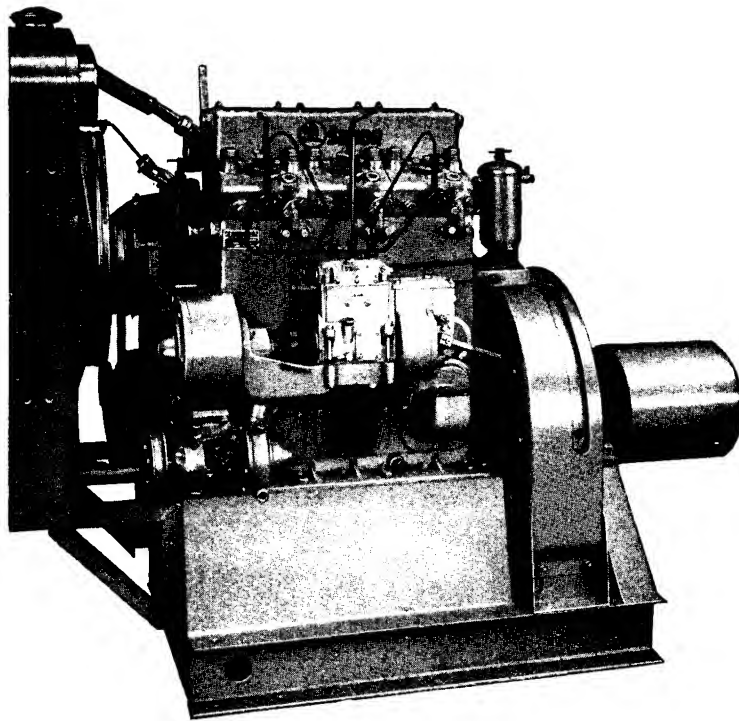
- a) a cada aumento o disminución de la presión barométrica de 6,35 Hg, la potencia aumenta o disminuye de 1%.
- b) si la temperatura del aire ambiente aumenta de 2,8° C, la potencia del motor disminuye de 1%.
- c) si la humedad del ambiente aumenta rebasando los 15 mm Hg, la potencia disminuye siempre de 1%, aumentando la presión del vapor de 6,35 Hg.

Curvas de potencia máxima, nominal y permanente para el motor 4 S 110 de cuatro cilindros

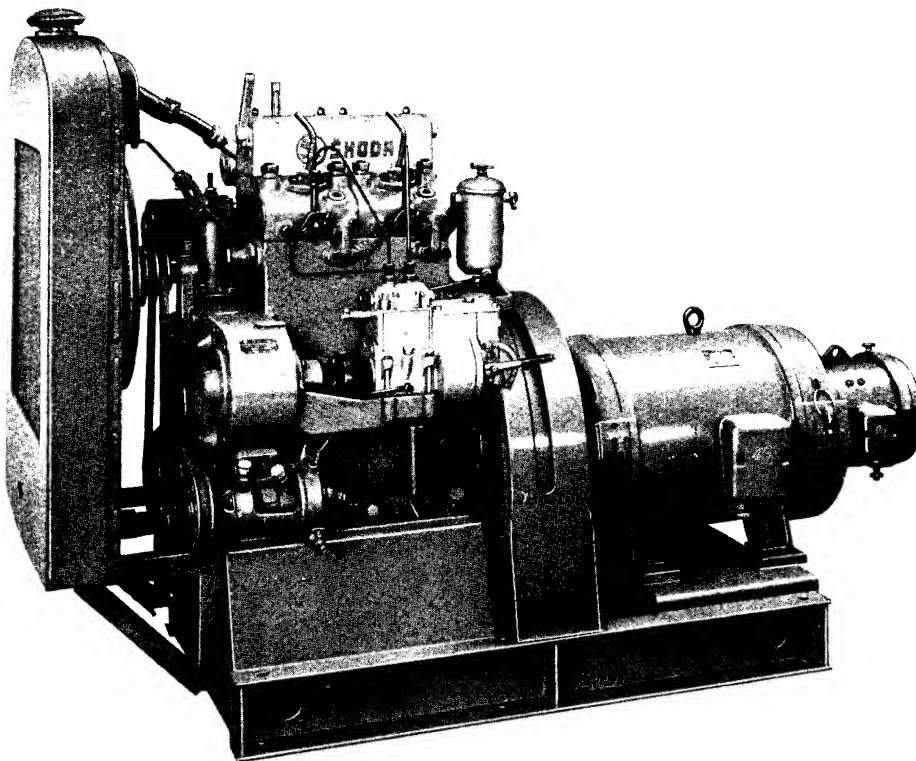


Consumo de combustible para motores 4 S 110 de cuatro cilindros





Motor Skoda-Diesel 3S110 con arranque eléctrico, ejecución especial, con árbol alargado, polea de correa y cojinete exterior, sobre un bastidor común.



Grupo electrógeno Skoda-Diesel de 16 kVA, 1000 rev./min., 50 per./seg. 400.231 V, con motor Škoda 2S110.

COMBUSTIBLE

Consumo a	100%	75%	50% de la potencia nominal
grs/CV/h	180	190	205

con una tolerancia de 5% empleado un combustible adecuado, de una potencia calorífica mínima de 10.750 kcal/kg.

ACEITE LUBRIFICANTE

Desarrollando el motor su potencia nominal, el consumo de engrase fresco agregado asciende a 3—5 g/CV/h con una tolerancia de 10%. Para los motores Diesel SKODA pueden utilizarse todos los combustibles y lubricantes de buena calidad, que se utilizan normalmente en los motores Diesel. Todos los motores son ensayados a la carga normal y con sobrecarga en el taller de pruebas de la fábrica. Los resultados se inscriben en la respectiva certificado de pruebas, con indicación del consumo de combustible y de aceite lubricante.

AGUA DE REFRIGERACION

Unos 15 litros/CV/h, desarrollando el motor su potencia nominal, con una diferencia de 40° C de temperatura del agua entrante y saliente. El consumo del agua refrigerante necesaria aumenta o disminuye según la variación de la diferencia de la temperatura. La temperatura del agua saliente no debe rebasar los 80° C. Caso de superar la crudeza del agua los 5 mg CaCO₃ por 100 cm³, hay que rebajarla, a bien será necesario utilizar un sistema de refrigeración indirecto. Nosotros podemos suministrar el equipo necesario contra el correspondiente recargo del precio.

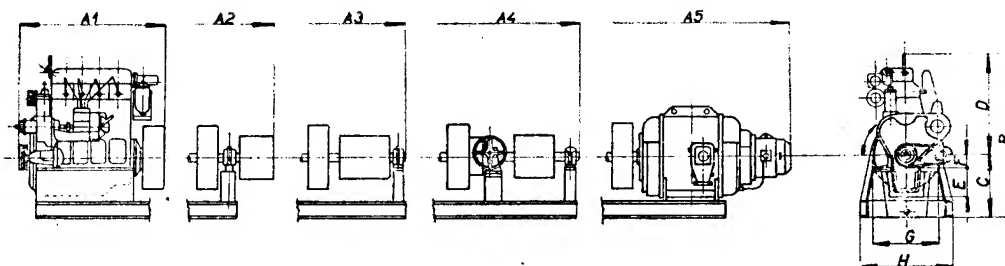
DATOS TECNICOS

Alesaje	110 mm	Presión de inyección	150 kg/cm ²
Carrera	150 mm	Temperatura del gas de escape a la carga	
Compresión	38 kg/cm ²	de 100%	400—480°C
Presión máxima	75 kg/cm ²	Diámetro de la tubería de escape	68 mm

RUEDAS VOLANTES

Tipo del motor	Arranque	Volante				Irregularidad de velocidad	
		Diámetro mm	Anchura mm	Peso kg	Momento de inercia PD ² kgm ²	1000 r. p. m.	1500 r. p. m.
2S110	a mano	620	150	150	41	1/97	1/219
	neumático	620	150	150	41	1/97	1/219
	eléctrico	620	135	168	37,6	1/93	1/208
3S110	a mano	620	150	150	41	1/110	1/246
	neumático	620	150	150	41	1/110	1/246
	eléctrico	620	135	168	37,6	1/107	1/224
4S110	neumático	500	150	135	21,7	1/200	1/452
	eléctrico	500	150	139	22,1	1/204	1/460
6S110	neumático	500	150	135	21,7	1/226	1/508
	eléctrico	500	150	139	22,1	1/230	1/518

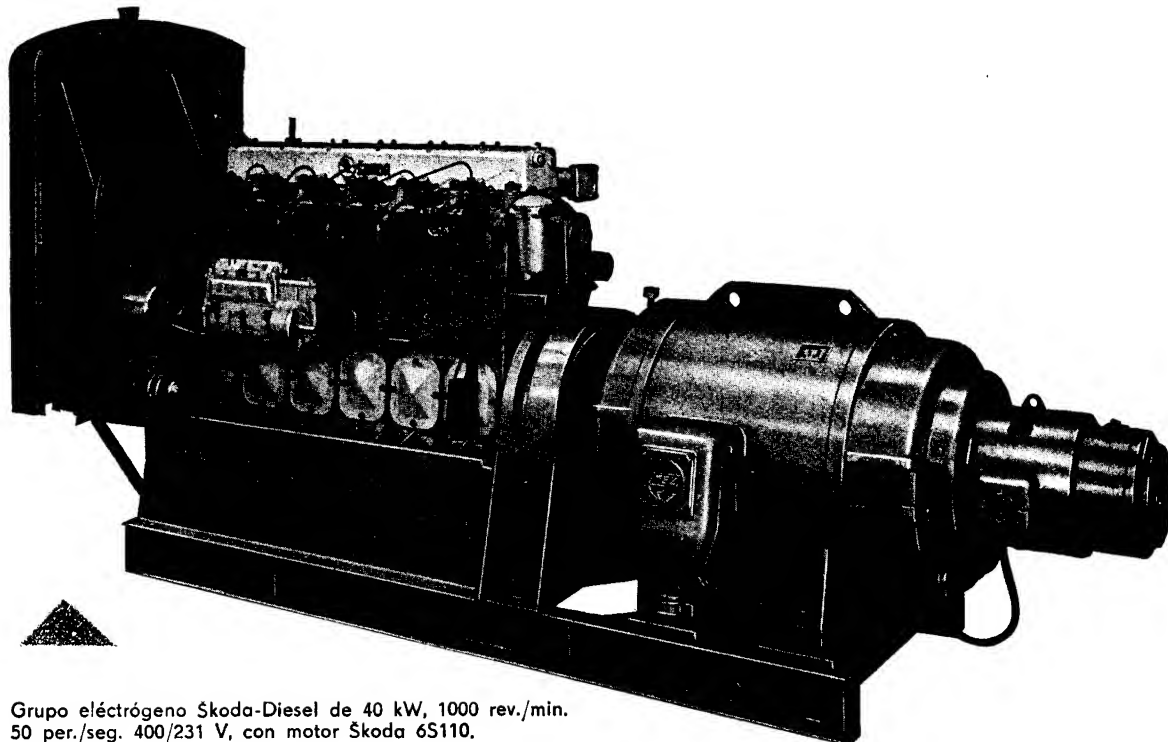
En casos especiales se dotan los motores de volantes calculados aparte. Los motores giran en el sentido de las agujas de un reloj, mirando del lado delantero, quiere decir del lado de la manivela de arranque.

**DIMENSIONES APROXIMATIVAS**

	A ₁	A ₂	A ₃	A ₄	A ₅	B	C	D	E	F	G	H
2S110	762	1212	—	—	1705	1252	422	830	202	80	480	730
3S110	962	1428	—	—	2035	1252	422	830	202	80	480	730
4S110	1203	—	1769	2066	2415	1300	470	830	246	80	480	730
6S110	1563	—	2129	2426	2930	1332	502	830	246	80	480	730



Cuadro de distribución tipo RAZE del grupo 16—50 kVA



Grupo electrógeno Škoda-Diesel de 40 kW, 1000 rev./min.
50 per./seg. 400/231 V, con motor Škoda 6S110.

EQUIPO NORMAL**a) Arranque a mano**

- 1 volante normal (montado en el motor)
- 1 bomba centrífuga de agua de refrigeración (montada en el motor)
- 1 depósito de combustible para 8 horas de marcha
- 1 tubo de llegada de combustible
- 1 depurador de combustible (montado en el motor)
- 1 depurador del aceite de engrase (montado en el motor)

- 1 depurador seco de aire (montado en el motor)
- 1 manómetro de aceite (montado en el motor)
- 1 manivela de arranque
- 1 juego de llaves y útiles
- 1 caja para útiles y herramientas
- 1 manual de instrucciones
- 1 juego de piezas de recambio

b) Arranque neumático

El mismo equipo como el especificado bajo a) para motores con arranque a mano, y además los accesorios siguientes:

- 1 distribuidor de aire (incorporado en el motor)

- 1 robinete de puesta en marcha
- 1 botellón de aire, completo
- 2 tubos de llegada de aire

c) Arranque eléctrico

El mismo equipo como el especificado bajo a) para motores con arranque a mano, y además los accesorios siguientes:

- 1 stárter eléctrico de 24 V, montado en el motor
- 1 dinamo 24 V, montado en el motor
- 1 caja de conexiones, montado en el motor

- 1 relé, montado en el motor
- 1 lámpara de control, montada en el motor
- 1 batería 24 V 105 Ah en las cajas de 12 V cada una

El „juego de piezas de recambio” suministrado con el motor comprende las siguientes piezas:

- 1 juego de juntas de las más importantes
- 1 juego de resortes
- 1 juego de bulones y tuercas de los más importantes
- Aros obturadores de pistón, a saber:
- 3 para motor Škoda 2S110
- 4 para motor Škoda 3S110
- 6 para motor Škoda 4S110

- 8 para motor Škoda 6S110
- Aros rascadores de aceite:
- 1 para motor Škoda 2S110
- 1 para motor Škoda 3S110
- 2 para motor Škoda 4S110
- 4 para motor Škoda 6S110

EQUIPO ESPECIAL

- | | |
|--|---|
| 1. Bastidor para el motor y la máquina accionada | 8. Bulones y tuercas de sujeción |
| 2. Bastidor, árbol alargado, polea para correa y cojinete exterior | 9. Bomba de combustible (montada sobre la bomba de inyección) |
| 3. Bastidor, acoplamiento desembragable, árbol alargado, polea y cojinete exterior | 10. Compresor de aire, a mano |
| 4. Radiador tipo automóvil, con su ventilador | 11. Embrague elástico |
| 5. Bomba de aspiración automática | 12. Tubería de escape |
| 6. Refrigerador del aceite de engrase (para países cálidos solamente) | 13. Silenciadores de escape |
| 7. Filtro de aire, húmedo (de aceite), para atmósfera polvorienta | 14. Comando remoto del motor |
| | 15. Otros equipos de la sala de máquinas. |

Modificaciones reservadas.

STROJEXPORT

P R A H A – C H E C O S L O V A Q U I A

DIESEL ENGINES

TYPE
ŠKODA IS110

Output 10 HP at 1000 r. p. m.

1 cylinder

Bore 110 mm ($4\frac{5}{16}$ ")

Stroke 150 mm ($5\frac{15}{16}$ ")

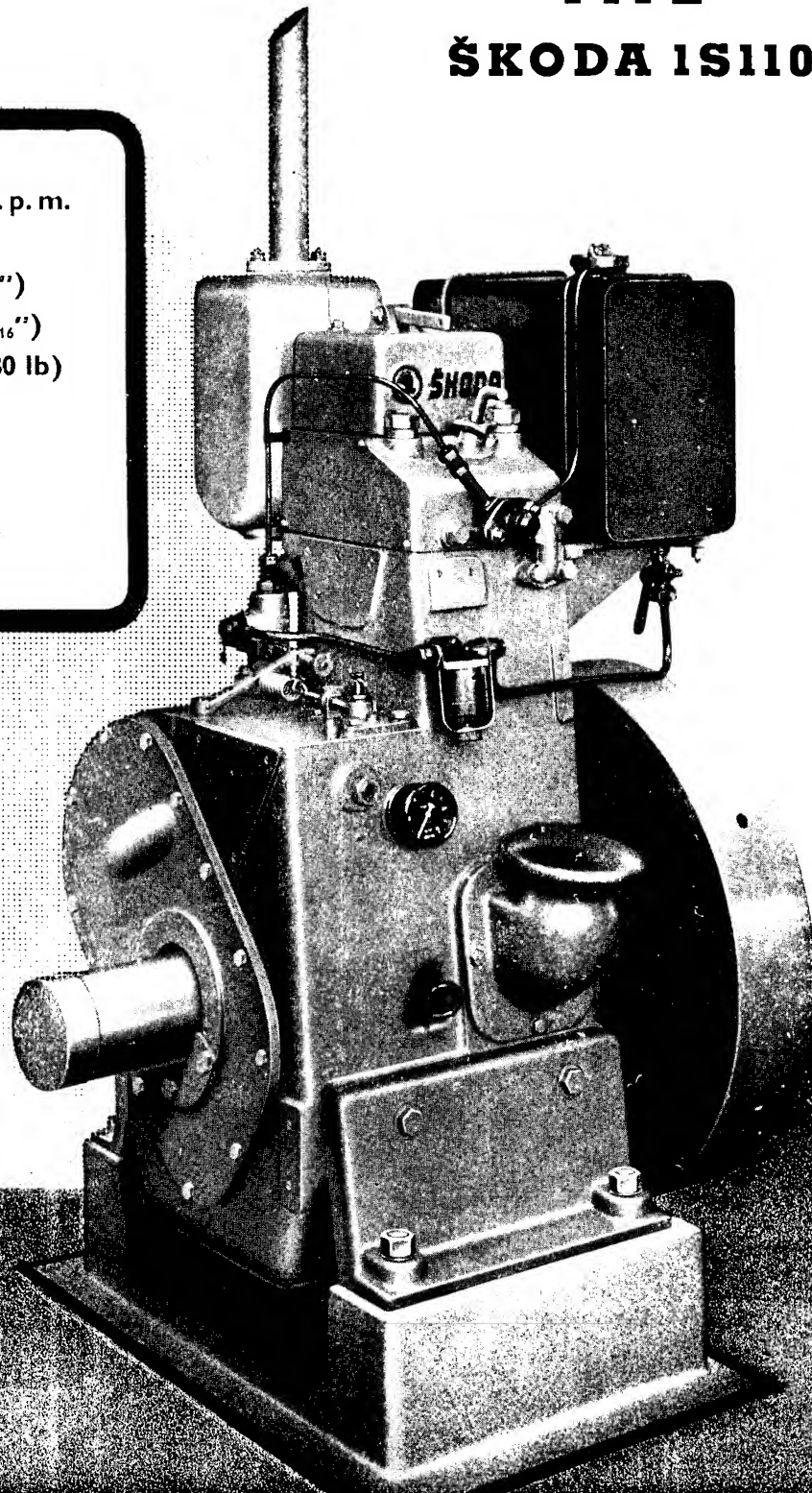
Net weight 400 kg (880 lb)

Gross weight

480 kg (1055 lb)

Shipping space

8,0 m³ (28 cu. ft.)



STROJEXPORT

PRAHA - CZECHOSLOVAKIA

**g Products Import and
CZECHOSLOVAKIA**

DIESEL ENGINE TYPE ŠKODA 1S110

Output 10 HP at 1000 r. p. m. Stationary single-cylinder four-stroke unit with fuel injection into a pre-combustion chamber, suitable for driving various industrial or agricultural machines, such as tractors, road rollers, narrow-gauge locomotives, etc. or for direct coupling with alternators. It is of an entirely enclosed design fully protected against undesirable external influences.

Crankcase

Cast in one piece, carries interchangeable bearings lined with bearing metal. The valve-timing and lubricating mechanisms are also housed inside the crankcase the bottom part of which serves as an oil sump.

Cylinder

Designed as an exchangeable cylinder liner made of special centrifugally cast and heat-treated metal. The cylinder head bolted to the cylinder accommodates the inlet and outlet valves and the fuel injection valve. The rocker arms are protected by a removable cover. The patent design of the combustion chamber ensures minimum fuel consumption and maximum output.

Piston

Made of aluminum alloy, provided with four compression and one scraper ring. The gudgeon-pin is case-hardened.

Connecting rod

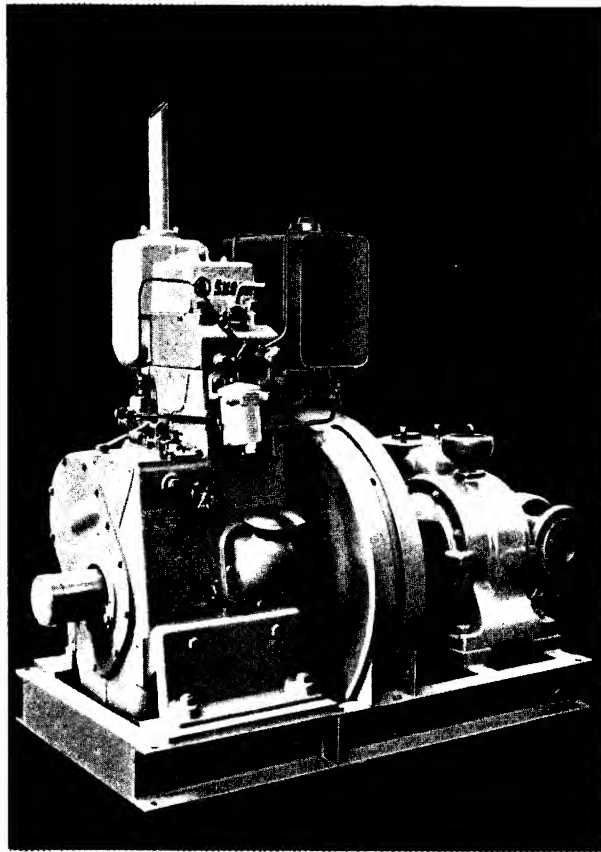
Fitted with a split big-end bearing the top part of which is lined with lead-bronze, the bottom part with bearing metal. The small-end bearing is of bronze. Both bearings are pressure lubricated.

Crankshaft

Forged of special first-grade steel, fitted with case-hardened journals and running in two roller bearings and one ball bearing.

Inlet and exhaust valves

Made of heat-resisting steel, driven by rocker arms, push rods and tappets, a camshaft and gears with herringbone teeth ensuring silent operation. The entire timing mechanism is lubricated by pressure oil.



Fuel injection pump

supplying an accurately controlled quantity of fuel through the injection valve into the pre-combustion chamber.

Injection governor

adjusting the quantity of fuel injected, thus maintaining a constant speed.

Water cooling

This can be arranged either by a continuous stream of water, or as an evaporating system, or also by means of a motor car radiator and fan. The water pump, mounted on the crankcase, is driven by a rubber V-belt. Water consumption for the through-flowing system is 15 litres per HP and hour [3,3 gallons per BHP per hour], with an inlet temperature of 40° C [104° F]. The tank required for the evaporating system or the radiator and fan are furnished on special request only.

Fuel consumption

with the engine running at full load and under normal conditions is 185 gr per HP per hour [0.410 lb per BHP per hour], based on a minimum heat value of the fuel of 10,000 cal. per kg [18,000 BTU per lb]. This figure is guaranteed with a tolerance of \pm 5 per cent.

Lubrication

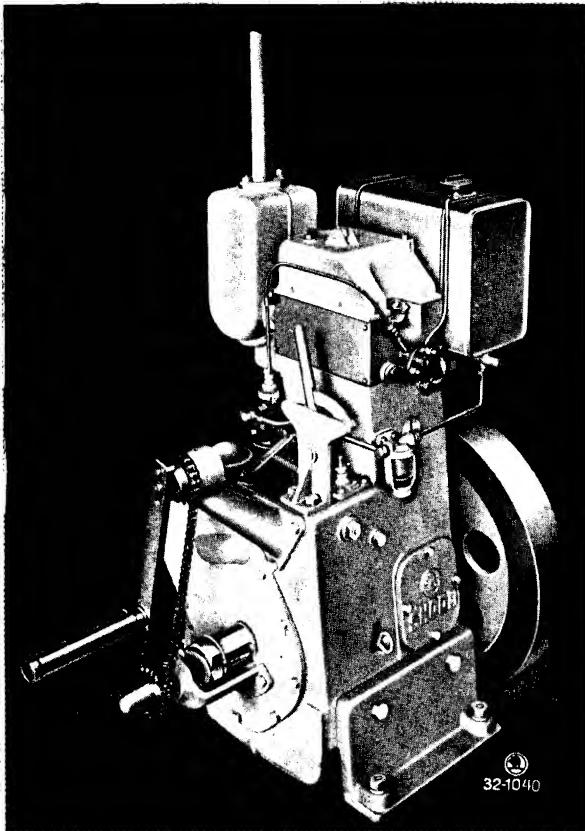
The pressure - circulation lubricating system is driven by a gear pump drawing the oil from the crankcase sump and delivering it through a laminated filter to the main bearings and through crankshaft and connecting rod channels to the big-end and small-end bearings. The valve timing mechanism and the governor are lubricated by an oil spray. The laminated filter may be cleaned during operation by turning its handle. Under full load the consumption of oil amounts to approx. 3—4 gr per HP per hour [0,0065—0,0090 lb per HP per hour].

Flywheel

We normally supply one flywheel dia 600/100 mm giving the following cyclic irregularity:

at a speed of 1000 r. p. m. 1 : 60

which is suitable for driving alternators for lighting.



Weight

of one engine with one flywheel and fuel tank:

	kg	pounds		kg	pounds
standard	390	858	export tare	80	175
accessories	10	22	required shipping space	0,8 cu. meters	28 cu. ft.
total net weight	400	880			

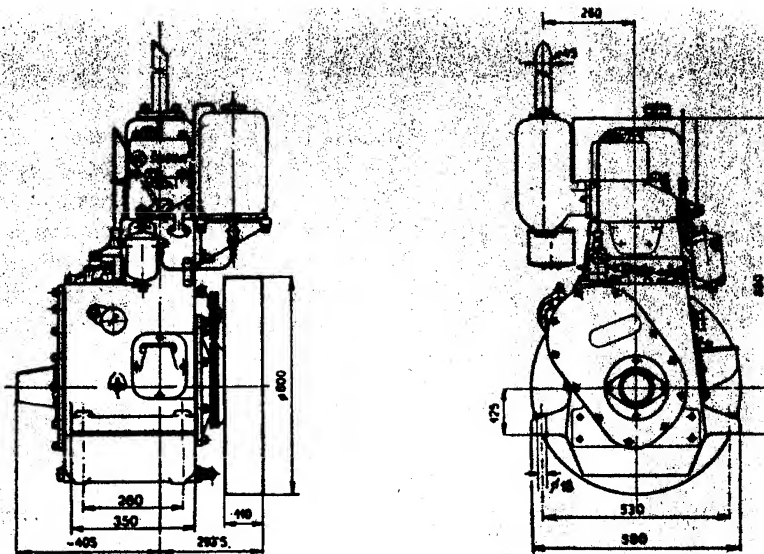
Standard accessories

- | | |
|--|----------------------|
| 1 standard flywheel. | 1 starting handle. |
| 1 fuel tank sufficient for 8-hour operation. | 1 set of spanners. |
| 1 fuel filter. | 1 set of spare parts |
| 1 exhaust pipe. | |

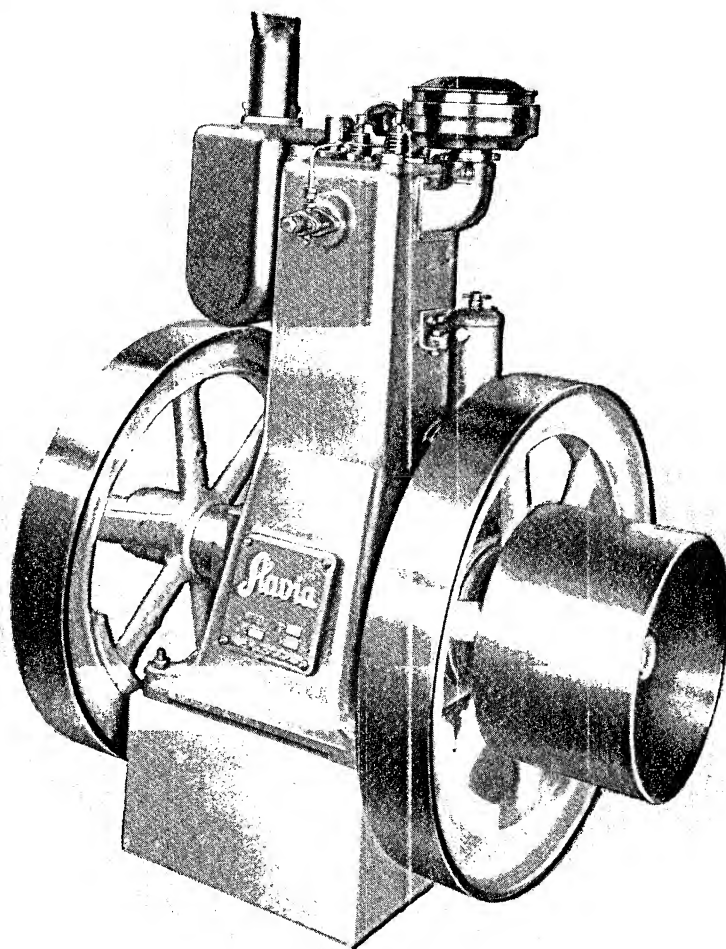
Special accessories

Furnished on request only:

- | | | | |
|---|-------|---|-------|
| belt pulley | 83005 | anchoring bolts | 83012 |
| bed plate for engine | 83002 | starting mechanism for marine engine | 83020 |
| bed plate for engine and driven machine | 83003 | reverse gear box for marine engines | 83021 |
| motor car radiator, fan and belt | 83007 | reduction reverse gear box for marine engines | 83022 |
| normal evaporating tank | 83008 | propeller shaft guide | 83023 |
| tropical evaporating tank | 83009 | propeller | 83024 |
| wing pump for feeding the fuel tank | 83011 | | |



STROJEXPORT



Slavia

D 5 - D 8 - D 12 - D 15

DIESEL

MOTORES SLAVIA - DIESEL

de marcha lenta D 5 - D 8 - D 12 - D 15

Los motores Slavia Diesel son de construcción vertical, de un solo cilindro. Para facilitar su aplicación se suministran estos motores en dos tipos, o sea, el tipo estacionario, y el tipo móvil montado sobre un carro de cuatro ruedas. Los motores son de cuatro tiempos, con inyección del combustible en la precámara. Las ventajas de estos motores son las siguientes: presión reducida de la inyección así como de la combustión, arranque fácil incluso en días fríos, y reducido consumo de combustible. Casi todos los elementos móviles están enteramente cubiertos siendo protegidos contra la penetración del polvo y de impurezas. Estos motores dan buen resultado en el accionamiento de máquinas industriales y agrícolas de toda clase, así como de bombas de agua.

Caja del motor

La caja del motor es de fundición, consiste en una sola pieza, tiene tapas de montaje y lleva cojinetes recambiables del árbol cigüeñal, revestidos de metal blanco y provistos de anillos de engrase. En la caja se halla también el mecanismo de distribución. La parte inferior de la caja forma un recipiente de aceite.

Camisa del cilindro

Esta consiste en fundición especial y es recambiable. La culata, que es desmontable, está provista de válvulas de aspiración y de escape, así como de una válvula de inyección de combustible, y de un porta-mecha.

Émbolo

El émbolo es de una aleación de aluminio y lleva tres anillos de compresión un anillo de control del aceite. El bulón del émbolo está cementado y fijado en el pistón mediante dos circuitos de seguridad.

Biela

Los casquillos de la cabeza de biela están revestidos de una copa de metal blanco. El casquillo inferior es de bronce. Los casquillos de la cabeza son engrasados mediante aceite elevado a cuchara en el extremo de la biela.

Árbol cigüeñal

El árbol cigüeñal es de acero forjado especial. Sus gorriones son puidos. El árbol cigüeñal gira en cojinetes de engrase automática por anillos.

Válvulas

Las válvulas de aspiración y de escape son de acero especial resistente a altas temperaturas. Su accionamiento está a cargo del árbol de distribución por medio de botadores, varillas y balancines. El árbol de distribución, los engranajes y botadores son engrasados con aceite proyectado. Los balancines poseen engrasadores.

Bomba de inyección

El combustible es inyectado en el cilindro mediante una bomba, con ayuda de una fina tobera, cuyo rendimiento es regulado con precisión.

Regulador

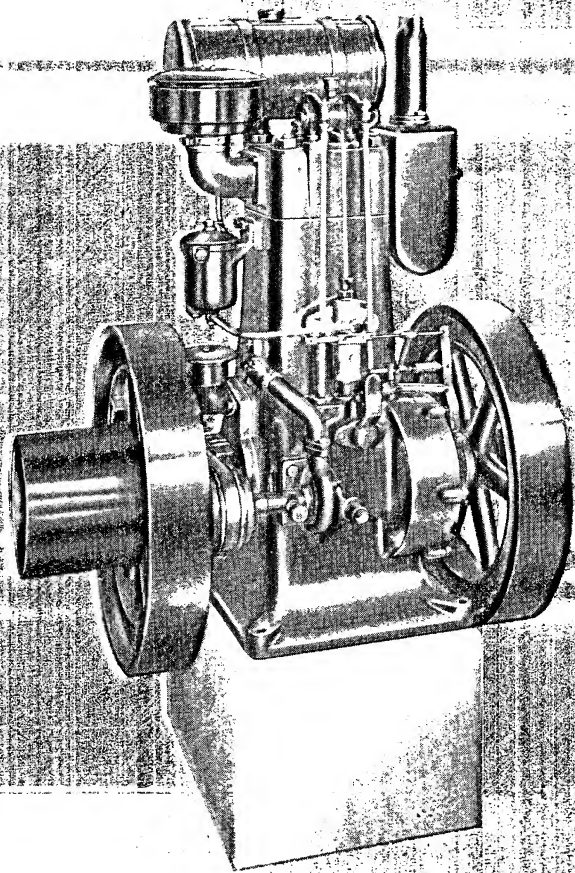
El regulador es de una construcción conmutable, regulando el combustible inyectado y manteniendo una velocidad estable del motor.

Refrigeración

En la máquina se puede montar un sistema de refrigeración de agua fresca, agua de circulación, o depósito de agua con tamiz. La bomba centrífuga de refrigeración está montada directamente sobre el bloque motor. El consumo del agua refrigerante es de 16 litros/HP/h, suponiendo una temperatura de entrada de 15° C. El sistema de refrigeración con depósito y tamiz viene en consideración únicamente para los motores montados sobre un bastidor con ruedas, y sólo a pedido especial.

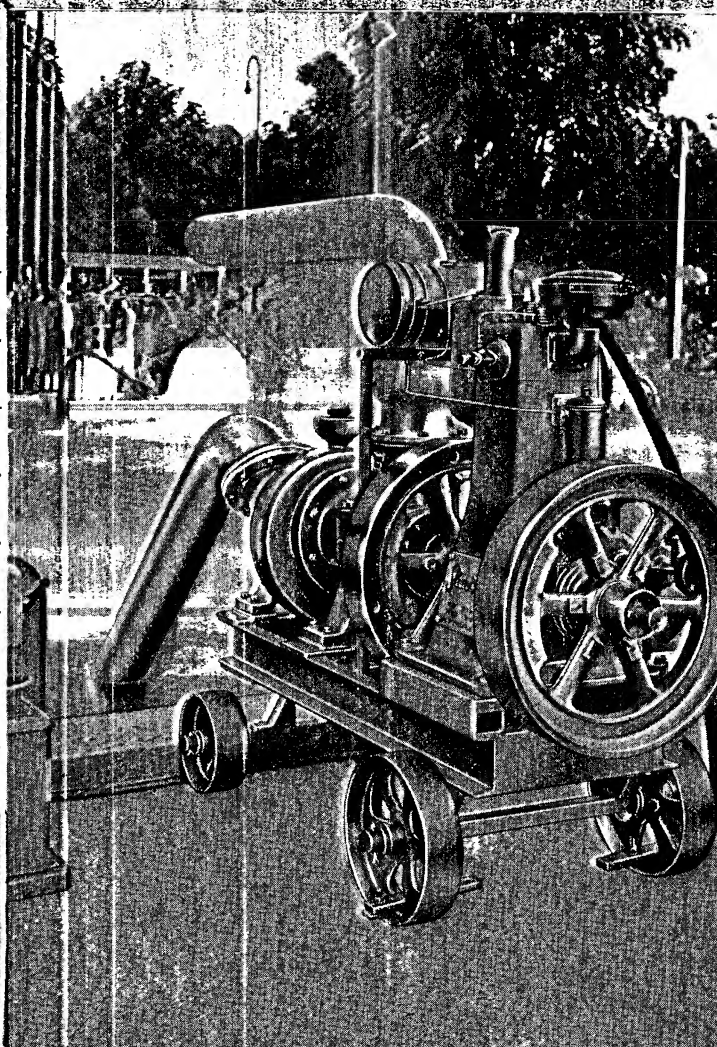
Lubricación

El engrase mediante aceite proyectado es sencillo y seguro. El consumo del lubricante, a plena carga asciende a 3-5 g/CV/h.



TIPO		D 5	D 8	D 12	D 15
Consumo del aceite de lubricación	g/CV/h	3-5	3-5	3-5	3-5
Presión de inyección	kg/cm ²	120	120	140	140
Cabida del tanque para combustible	l	9	9	18	18
Contenido del aceite en el cárter	l	2,5	3	5	7
Diámetro y ancho del volante	mm	500/75	550/90	680/120	800/120
Diámetro y ancho de la polea	mm	180/135	220/152	380/200	400/205
Grado de irregularidad		1:27	1:18	1:20	1:30
Peso neto del motor con equipo	kg	265	355	494	703

TIPO		D 5	D 8	D 12	D 15
Número de cilindros		1	1	1	1
Potencia nominal	CV	5	8	12	15
Alésaje	mm	100	120	145	155
Carrera	mm	125	150	170	180
Velocidad nominal	rev./min.	900	800	700	650
Compresión	kg/cm ²	42	42	41	42
Presión de combustión	kg/cm ²	54	54	54	56
Consumo del combustible de un poder calorífico inferior a 10.750 kcal/kg	g/CV/h	210	210	210	210



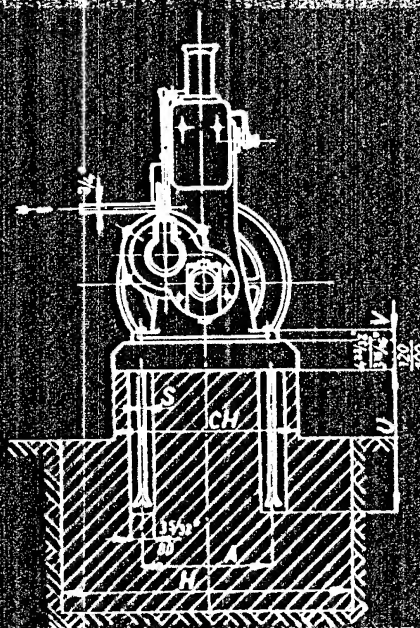
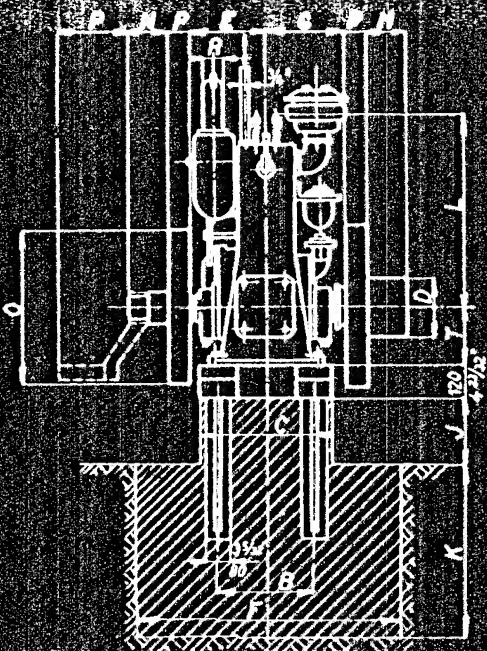
		D 5	D 8	D 12	D 15
Embalaje marítimo	kg	85	95	126	147
Volumen del embalaje marítimo	m ³	0,73	1,08	1,15	1,6

ACCESORIOS:

- 1 juego de llaves y útiles,
- 1 juego de piezas de recambio,
- 4 tornillos de anclaje,
- 1 manual de instrucciones.

EQUIPO NORMAL:

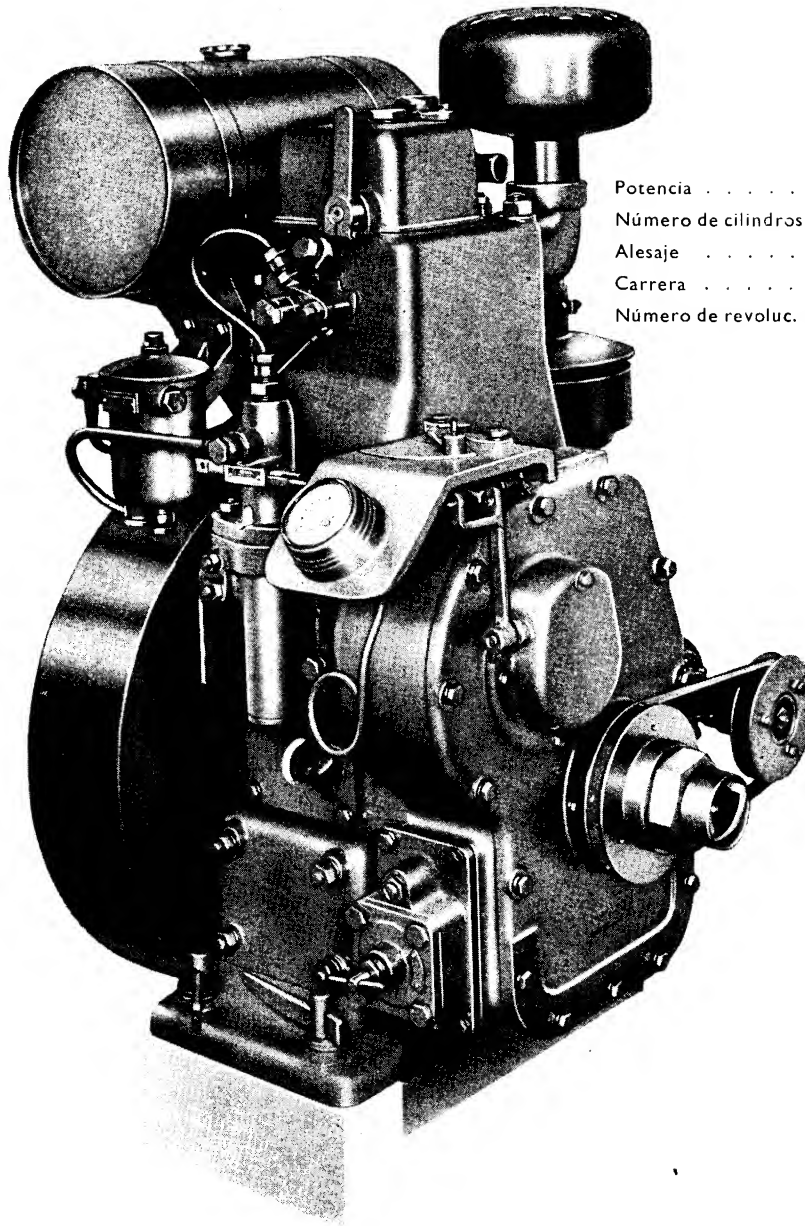
- 2 volantes,
- 1 polea,
- 1 depósito para combustible de capacidad suficiente para un servicio de 8 horas con su tubería de llegada,
- 1 filtro de combustible,
- 1 depurador de aire con baño de aceite,
- 1 silenciador del escape,
- 1 bomba centrífuga de refrigeración,
- 1 manivela de puesta en marcha.



Tipo	D5	D8	D12	D15	Tipo	D5	D8	D12	D15	Tipo	D5	D8	D12	D15	Tipo	D5	D8	D12	D15
A	395	470	500	490	G	210	245	255	280	L	610	660	770	865	R	50	50	64	76
B	305	330	380	405	H	900	1000	1200	1300	M	135	152	200	205	S	M16	M16	M16	M20
C	390	440	460	520	CH	560	650	700	750	N	110	105	135	185	T	170	195	220	185
D	180	220	380	400	J	180	180	180	280	O	500	550	680	800	U	450	450	520	850
E	220	245	250	280	K	500	600	650	900	P	75	90	120	120	V	35	40	40	45
F	750	850	900	1000						Q	235	240	250	220					

Modificaciones reservadas.




STROJEXPORT


Potencia 9 HP
 Número de cilindros 1
 Alesaje 100 mm
 Carrera 120 mm
 Número de revoluc. 1500/min.

MOTOR SLAVIA-DIESEL TIPO IS100A

Tipo	Núm. de cilindros	Potencia a las		Puesta en marcha	Peso del motor con accesorios		Volumen de embarque m ³
		1000	1500		neto	bruto	
		rev./min.					
1 S 100 A	1	6	9	manual	272 kg	360 kg	0,52

El motor SLAVIA-Diesel 1 S 100 fué construido a base de larguísimas experiencias en la producción y en la explotación de la máquina. La calidad primorosa del material y la elaboración cuidadosa con aplicación de los métodos de maquinado más modernos garantizan su absoluta seguridad de funcionamiento y larga durabilidad de la máquina incluso en condiciones de trabajo las más severas.

CAJA DEL MOTOR

La caja del motor consiste en una sola pieza, conteniendo los cojinetes principales recambiables y la camisa del cilindro refrigerada con agua. La parte inferior de la caja forma un recipiente de aceite provisto de aletas para conseguir una refrigeración eficaz del aceite.

ARBOL CIGÜEÑAL

El árbol cigüeñal es forjado de acero de óptima calidad. Los casquillos de los cojinetes principales son de acero revestido de metal antifricción.

LA BIELA

de forma H es forjada. El cojinete bipartido de la biela para el gorrón de manivela está revestido de un metal antifricción de calidad. El cojinete del perno del pistón está provisto de un casquillo de bronce fosforoso.

EL PISTÓN

es de una aleación de metales ligeros. Posee tres aros de compresión y otros dos de control del aceite. El perno del pistón es hueco cementado, templado y pulimentado.

**LA CULATA
DEL CILINDRO**

lleva la válvula de aspiración y de escape. El funcionamiento de las válvulas está a cargo de levas mediante varillas alzadoras y balancines. En la culata está acondicionada la cámara de ignición de una forma especial que garantiza una mezcla perfecta del combustible con el aire comprimido y con eso una combustión perfecta y un consumo reducido del gas-oil. El árbol de distribución es impulsado por el eje manivela por medio de engranajes.

**LA BOMBA
DE INYECCIÓN**

suministra el combustible mediante la tobera de perno a la cámara de combustión. La cantidad de combustible se regula con precisión. La inyección correcta de la bomba está ajustada con precisión ya en la fábrica productora.

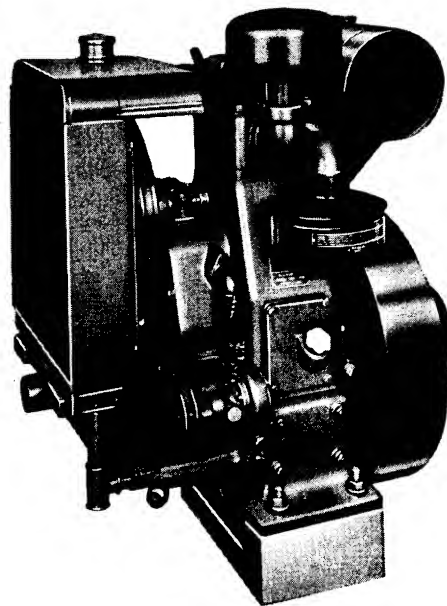
**EL REGULADOR
CENTRÍFUGO**

dirige la cantidad del combustible inyectado en la cámara de combustión, con lo que se mantiene el régimen constante de las revoluciones del motor. A pedido del cliente se puede ajustar el regulador a 1000 rev./min. En su ejecución normal el motor está ajustado a 1500 rev./min.

**LA
LUBRIFICACIÓN**

queda a cargo de la bomba dentada que aspira el aceite a través de un depurador grueso y fino del recipiente formado por la parte inferior de la caja motor, y que lo impele a los respectivos sitios de los órganos móviles del motor. La presión del aceite la indica el correspondiente manómetro, pudiendo ser ajustada con ayuda de la válvula de regulación.

Motor Diesel con radiador



**LA
REFRIGERACIÓN**

es de paso, en los tipos normales del motor. El agua refrigerante afluye del depósito mediante una bomba centrífuga a la caja motor, y, pasando por la culata, sale afuera. A pedido especial, sobre recargo del precio, puede ser suministrado el motor con radiador de automóvil y un ventilador.

**EL ARRANQUE
DEL MOTOR**

se verifica manualmente. En el invierno y en los días se puede facilitar el arranque de la máquina introduciendo en el orificio roscado dispuesto sobre la precámara de combustión una mecha de ignición automática. El tiempo necesario para la puesta en marcha del motor oscila entre los 3 a 5 minutos, siendo la temperatura del ambiente 0° C.

**DATOS TÉCNICOS
CONSTRUCCIÓN**

El SLAVIA Diesel 1 S 100 es un motor de cuatro tiempos, sin compresor, de tipo vertical, con inyección del combustible en la precámara y lubricación forzada.

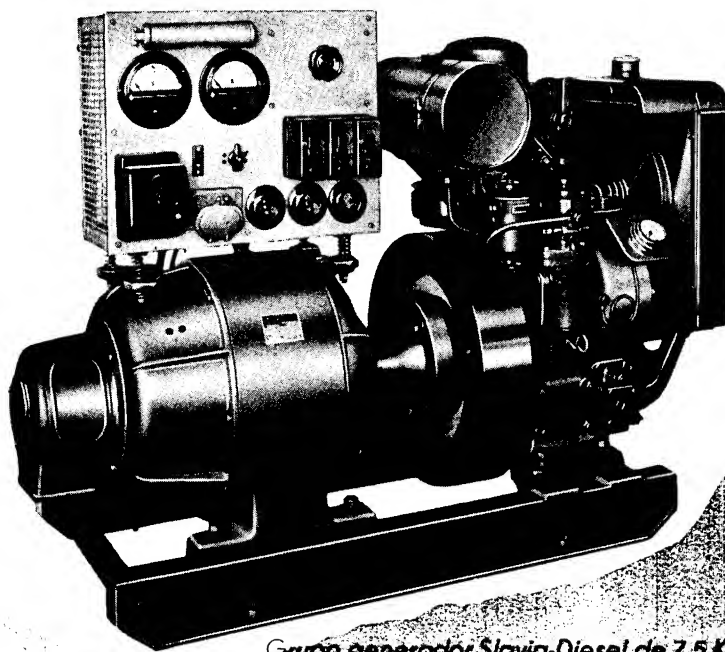
NORMAS

ČSN

RENDIMIENTO

Las potencias insertadas en la Tabla de la primera página se entienden con el número nominal de revoluciones y en una jornada de 12 horas. El motor soporta durante 1 hora una sobrecarga de hasta 10%, durante un minuto hasta un 20% de su potencia nomin. Las potencias fueron conseguidas con una presión barométrica de 749 mm Hg, temperatura del ambiente 29,4° C, un grado de humedad equivalente a una presión de 15 mm Hg de vapores de agua. Cambiando las condiciones de servicio varían los rendimientos de la forma siguiente:

- a) al cambiar la presión barométrica en 6,35 Hg sube o baja el rendimiento en 1%.
- b) al aumentar la temperatura del aire en 2,8° C baja la potencia del motor en 1%.
- c) al aumentar la humedad del aire, es decir por encima de los 15 mm Hg baja la potencia del motor en 1%, por cada aumento de la presión de los vapores de agua en 6,35 Hg.



Grupo generador Slavia-Diesel de 7,5 KVA, tipo portátil

CONSUMO DEL COMBUSTIBLE

a los 100% 75% 50% de potencia nominal
210 220 240 g/HP/hora
con una tolerancia de $\pm 5\%$ gastando un combustible adecuado de un valor calorífico mínimo de 10 750 kcal/kg.

CONSUMO DEL ACEITE LUBRIFICANTE

Desarrollando la máquina su potencia nominal importa el consumo del aceite lubricante de 4 a 5 g/HP/h con una tolerancia de 10%. Cada motor es sometido a una prueba rigurosa para el servicio normal y para la sobrecarga.

CONSUMO DEL AGUA REFRIGERANTE

La máquina consume unos 15 litros por HP/hora desarrollando el motor su potencia nominal. La temperatura del agua de salida no debe superar los 80° C. Si el grado hidrométrico del agua rebasa los 5 mg CaCO₃ por 100 cm³ hay que adelgazarla.

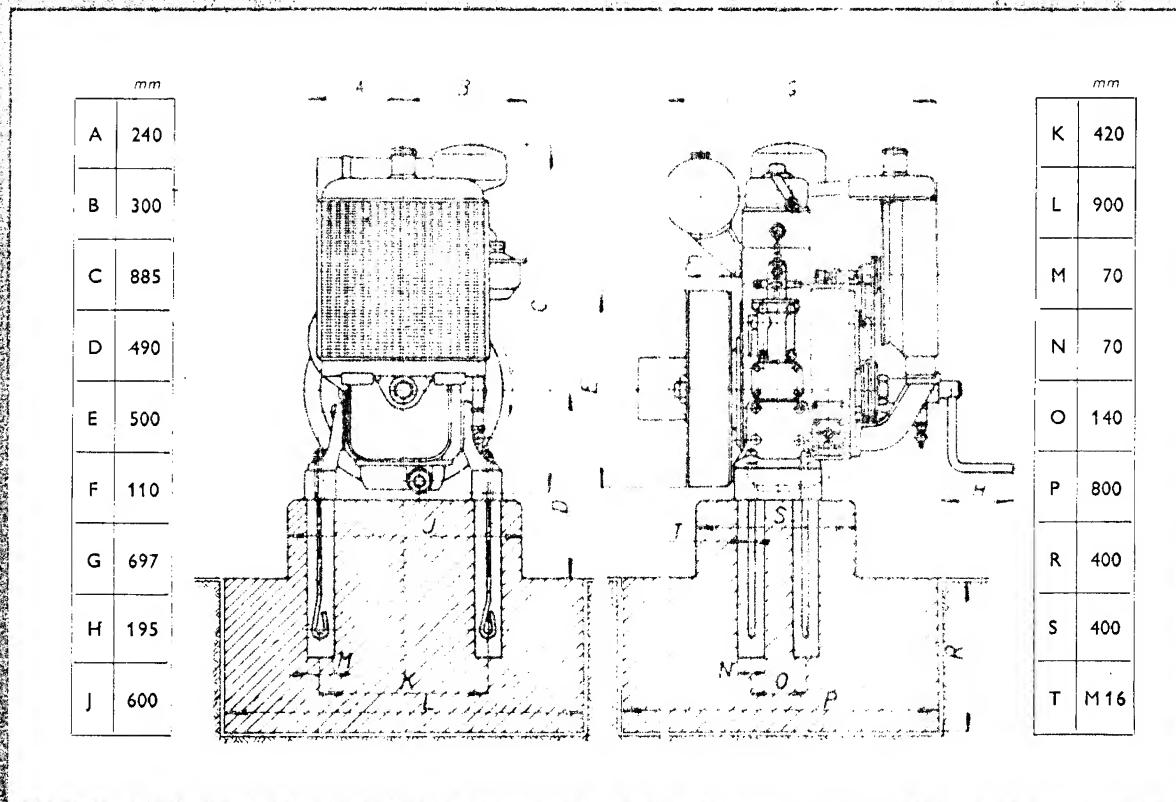
DATOS TÉCNICOS

Alesaje	100 mm	Presión de inyección	100 kg/cm ²
Carrera	120 mm	Temperatura de los gases de escape a una carga de 100%	420-440° C
Compresión	40 kg/cm ²	Diámetro de la tubería de escape	50 mm
Presión máxima	70 kg/cm ²	Diámetro y ancho de polea	160/130 mm

EQUIPO NORMAL

Depósito de combustible, depurador del combustible, bomba de inyección, manómetro de aceite, bomba de agua, silenciador de escape, filtro de aire, palanca de decompresión, manivela de puesta en marcha, indicador del nivel de aceite, polea, bulones de anclaje, un juego de repuestos y herramientas.

Croquis acotado del motor montado sobre un fundamento de material
El motor puede ser suministrado con o sin refrigerador

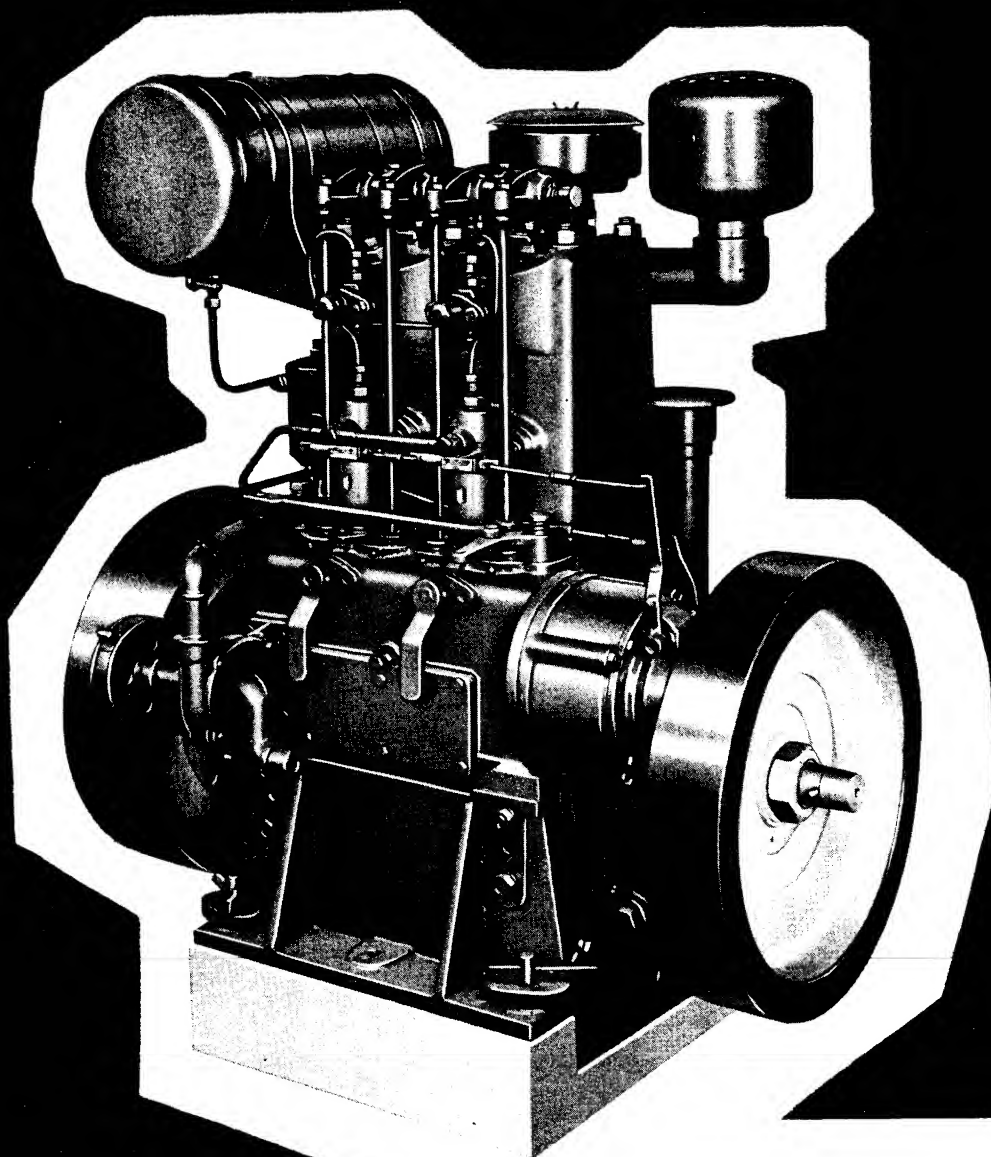


Modificaciones reservadas.

STROJEXPORT

PRAHA - CHECOSLOVAQUIA

STROJEXPORT



Slavia

DIESEL

Motores Rápidos „Slavia“

Tipos	DR 27
CILINDROS	2
POTENCIA	
1500 rpm	27 HP
1000 rpm	18 HP
TALADRADO	115 mm
CARRERA	150 mm
PESO NETO	490 kg
PESO BRUTO	590 kg
EMBALAJE	
MARITIMO	1.35 m ³

MOTOR DIESEL RÁPIDO SLAVIA DR 27

Los motores Diesel rápidos Slavia poseen gran estabilidad, son de construcción vertical, de cuatro tiempos y con inyección de combustible en la antecámara. Esta especial ejecución permite una menor presión de inyección e inflamación, fácil arranque incluso con tiempo frío y reducido consumo de combustible. Casi todas las piezas en movimiento están completamente cubiertas y por ello se encuentran al abrigo del polvo y la suciedad. Estos motores se destinan al accionamiento de las más diversas máquinas agrícolas e industriales, bombas de agua y generadores.

Caja del motor

Está formada por una sola pieza de fundición, provista de tapas laterales y fondo desmontable; en éste se pueden ver aletas para la refrigeración del aceite. La caja lleva cojinetes cambiables de metal especial de cojinetes para sostener el cigüeñal. En la caja se encuentran los mecanismos de distribución y lubricación y su parte inferior forma el depósito de aceite.

El cilindro

Es un suplemento cambiante de fundición especial. Encima de él se encuentra la culata con las válvulas de aspiración y escape, el soporte con los elementos de arranque y la válvula de inyección.

Émbolo

Es de aleación de aluminio y posee tres segmentos de émbolo y dos arandelas-estopas. El perno del émbolo está alojado en el émbolo y es solidario con él.

Bielas

Tiene un cojinete de dos piezas para el perno de la manivela; este cojinete es de metal especial fundido. El cojinete del perno del émbolo es de bronce y se engrasa con el aceite salpicado.

Cigüeñal

Es de acero forjado de calidad y sus pernos pulimentados se alojan en dos cojinetes de frotamiento.

Válvulas

Las de aspiración y escape son de acero especial resistente a las altas temperaturas. Las válvulas se accionan por palancas y varillas mandadas por el árbol de distribución, al que el cigüeñal transmite su movimiento por medio de ruedas dentadas. Estas, así como el árbol de distribución y las levas, se encuentran en la caja del motor, siendo engrasadas con las salpicaduras del aceite; las palancas están engrasadas con grasa.

Bomba de inyección

Inyecta combustible en la antecámara a través de la válvula de inyección. La cantidad de combustible se regula exactamente.

Regulador

Es de velocidad y al regular la cantidad de combustible inyectado en la antecámara, mantiene constantes las revoluciones del motor. Las revoluciones y potencia del motor se pueden regular apretando o aflojando los resortes de regulación. Con la palanca de regulación a mano se pueden cambiar las revoluciones en forma continua.

Refrigeración por agua

Puede ser por corriente, por circulación o con radiador de auto. La bomba de agua está montada directamente sobre la caja del motor y es accionada por una correa achafanada. El consumo de agua (refrigeración por corriente) es de 20 litros por CV/hora, siendo de 15° C la temperatura del agua a la entrada. Los motores con radiador de auto se entregan sólo sobre pedido especial.

Lubricación

Es a presión en los cojinetes principales de las bielas, empleándose una bomba dentada que aspira el aceite del fondo de la caja del motor a través de un filtro. La bomba de lubricación posee una válvula de seguridad que se puede ajustar a la presión prescrita. La presión del aceite se controla con un manómetro. El perno del émbolo y la distribución se engrasan con aceite salpicado. El consumo de aceite a plena carga es de unos 5 g/CV/hora.

Rendimiento

Las potencias indicadas en la tabla de la portada se entienden para las revoluciones nominales y una jornada de 12 horas de trabajo.

El motor puede estar sobrecargado en un 10% durante una hora y en un 20% durante un minuto.

Estos rendimientos fueron establecidos a una presión barométrica de 749 mm col. de merc., temperatura del ambiente 29,4° C y humedad del aire que responde a una presión de vapor de 15 mm. Si la máquina debe trabajar bajo otras condiciones, cambian los rendimientos de la siguiente manera:

- a) a cada variación de la presión barométrica de 6,35 mm col. de merc. aumenta o disminuye la potencia en 1%,
- b) a cada aumento de la temperatura del aire ambiente de 2,8° C la potencia del motor baja en 1%.
- c) si la humedad del aire aumenta, es decir rebasando los 15 mm col. de mercurio, la potencia del motor pierde 1% por cada 6,35 mm col. de mercurio de aumento de la presión de vapor.

DATOS TÉCNICOS

Tipo de motor		Slavia DR 27
Número de cilindros		2
Potencia permanente HP	a 1500 rpm	27
	a 1000 rpm	18
Taladrado	mm	115
Carrera	mm	150
Cilindrada	cm ³	3120
* Consumo de combustible	g/CV/hora	205
Tubería de escape	pulgadas	2 1/2

*) El consumo de combustible de 10.000 Cal/kg es el siguiente a plena carga y en condiciones normales de servicio que se garantizan con una tolerancia de $\pm 5\%$.

PESOS

Peso de los motores de ejecución normal y con accesorios normales:

Tipo de motor	Motor neto kg	Embalaje marítimo kg	Motor bruto kg	Volumen del embalaje marítimo kg
Slavia DR 27	490	100	590	1,35

VOLANTES

Se entregan normalmente de las siguientes dimensiones:

Tipo de motor	Número de ruedas volantes	Diámetro ancho en mm	Momento de inercia a 1500 rpm KG ² en kgm ²	Grado de irregularidad a 1500 rpm
Slavia DR 27	1	480,85	18,5	1:90
	1	480/130		

DR 27

Polea

Con los motores Slavia tipo DR 27 sólo entregamos poleas en caso de pedido especial, siendo necesario encargar al mismo tiempo un árbol de prolongación, cojinete exterior y marco soldado.

Accesorios especiales que se entregan sobre demanda y con aumento de precio

radiador de auto con ventilador e impulsión - marco de base para el motor y el radiador de auto, árbol de prolongación, poleas, cojinete exterior y marco soldado.

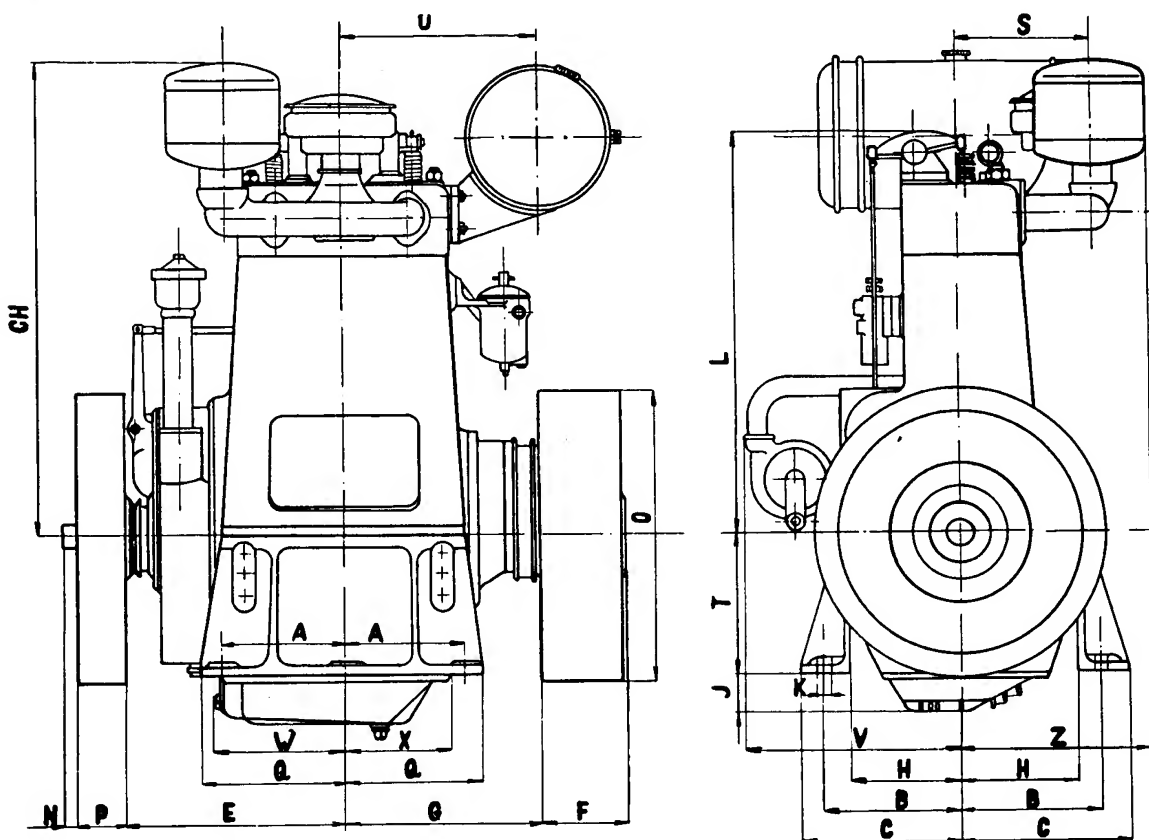
Slavia DR 27

Equipo normal de los motores

- 2 volantes
- 1 depósito de combustible para 8 horas de servicio, con tuberías
- 1 filtro de combustible
- 1 manivela

Accesorios normales

- 1 juego de piezas de recambio
- 1 juego de llaves y herramientas
- 1 aceitera
- 4 tornillos de base
- 1 manual de instrucciones



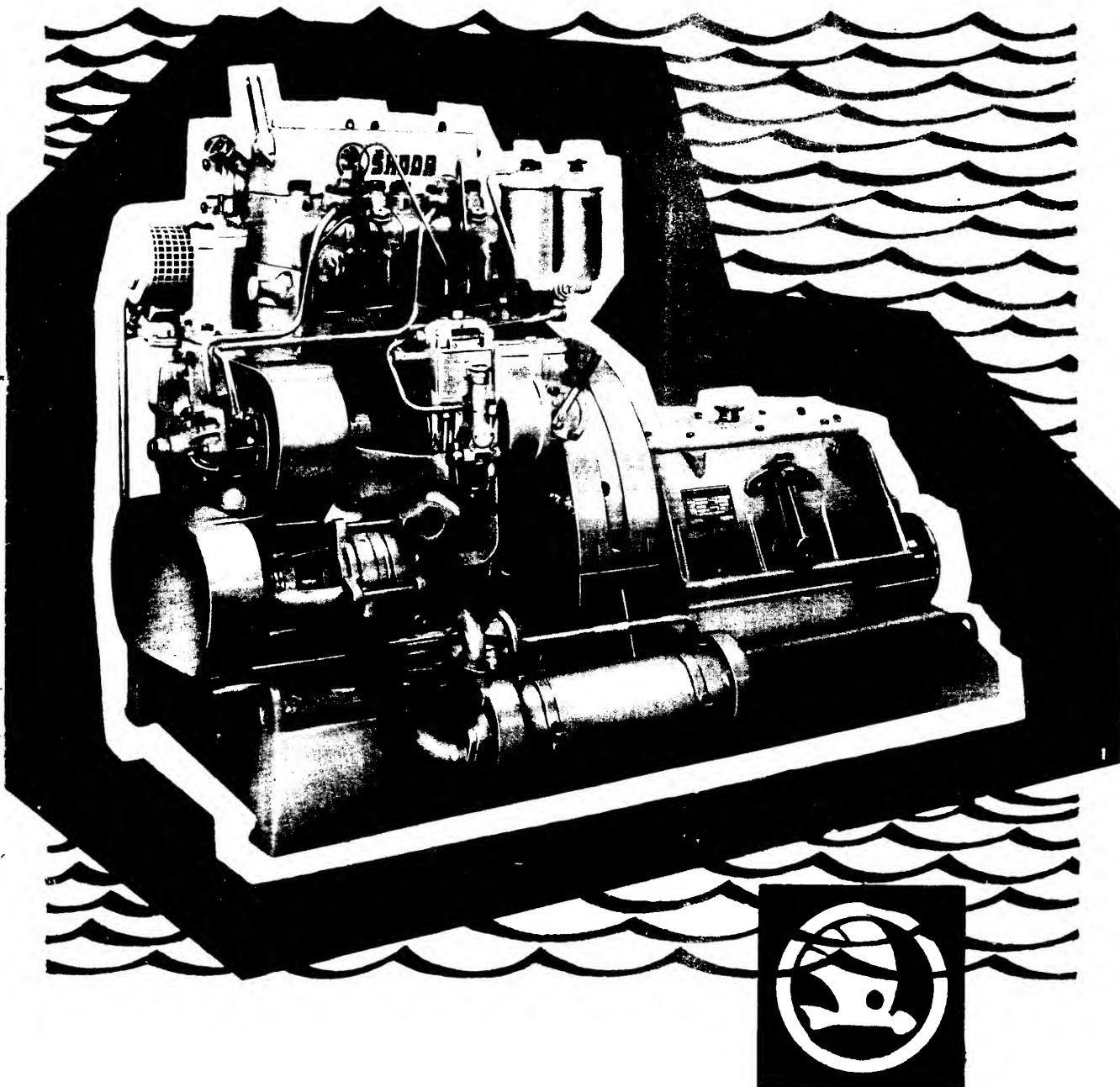
	A	B	C	E	F	G	H	CH	J	K	L	N	O	P	S	T	U	V	Z
mm	200	227	260	345	130	320	180	780	110	18	670	32	480	85	200	225	305	350	310

Queda reservado el derecho de cambiar los datos técnicos

P R A H A - C H E C O S L O V A Q U I A

STROJEXPORT

Les moteurs navales-diesel
2-6-L-110



2 L 110

CAJA DE INVERSION Y DE REDUCCION	HEUCE R. P. M.	A	B	C	D	E	F	G	H	J	K	L	M	M'	N	O	O'	P	R	S	S'	T	U	V	X	Y
174.100/1,4	1070	670	760	380	1650	1450	1250	1540	350	830	1180	200		94	50	420x2	400	160	60	135-285	60	514	750	276	170	45
174.100/2	750	670	760	380	1650	1450	1250	1545	350	830	1180	200		94	50	420x2	400	160	60	145-205	70	486	750	309	170	50
174.100/2,5	600	670	760	380	1650	1450	1250	1800	350	830	1180	200		94	50	420x2	400	160	60	165-250	70	470	1000	330	170	55
174.100/3,15	475	670	740	350	1740	1540	1250	1800	427	830	1257	200	140		115	320x3	320	145	80	165-250	70	470	1000	330	227	55

3 L 110

Los motores Diesel marinos tipo standard equipados con cebador automático de las bombas centrífugas. Las bombas de émbolo se suministran solo a solicitud.

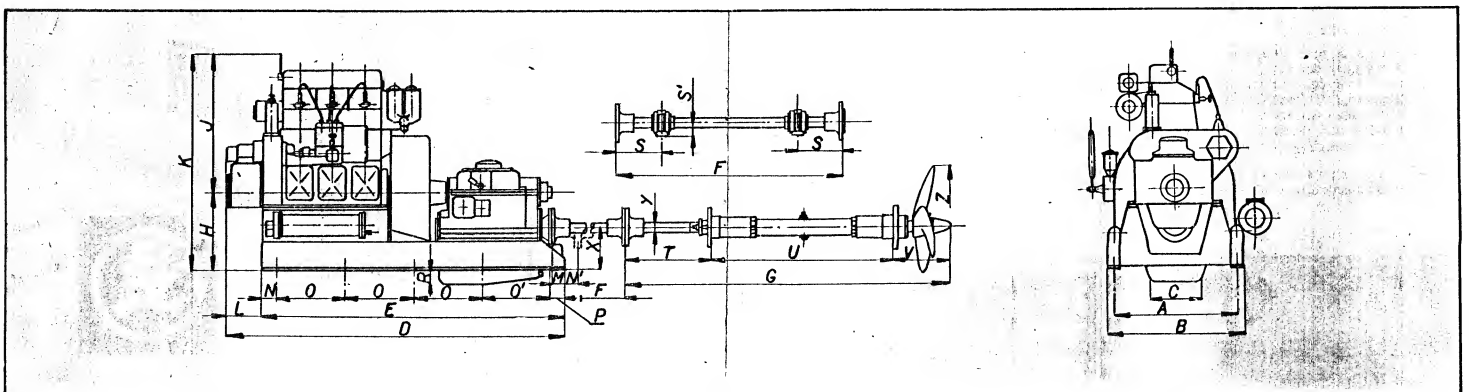
CAJA DE INVERSION Y DE REDUCCION	HEUCE R. P. M.	A	B	C	D	E	F	G	H	J	K	L	M	M'	N	O	O'	P	R	S	S'	T	U	V	X	Y
174.100/1,4	1070	670	760	380	1830	1630	1250	1800	350	830	1180	200		94	95	350x3	350x1	135	80	165-250	70	470	1000	330	170	55
174.116/2	750	670	740	350	1920	1720	1250	1800	427	830	1257	200	140		110	370x3	370x1	130	80	165-250	70	470	1000	330	227	55
174.116/2,5	600	670	740	350	1920	1720	1250	1800	427	830	1257	200	140		110	370x3	370x1	130	80	260-380	95	425	1000	385	227	70
174.116/3,15	475	670	740	350	1920	1720	1250	1800	427	830	1257	200	140		110	370x3	370x1	130	80	260-380	95	425	1000	385	227	70

4 L 110

CAJA DE INVERSION Y DE REDUCCION	HEUCE R. P. M.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	O'	P	R	S	S'	T	U	V	X	Y
174.116/1,4	1070	670	740	350	2100	1900	1250	1810	427	830	1257	200	140	115	328x4		173	80	260-380	95	425	1000	385	227	70
174.116/2	750	670	740	350	2100	1900	1250	1810	427	830	1257	200	140	115	328x4		173	80	260-380	95	425	1000	385	227	70
10.174.118/2,5	600	670	730	400	2095	1895	1250	1820	459	830	1289	200	105	65	350x4	300x1	130	100	260-380	95	415	1000	405	235	75

6 L 110

CAJA DE INVERSION Y DE REDUCCION	HEUCE R. P. M.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	O'	P	R	S	S'	T	U	V	X	Y
174.116/1,4	1070	670	740	350	2460	2260	1250	1820	427	830	1257	200	140	115	400x4	400x1	145	80	260-380	95	415	1000	405	227	75
10.174.118/2	750	670	730	400	2455	2255	1250	1820	459	830	1289	200	105	65	350x5	300x1	140	100	260-380	95	415	1000	405	235	75
10.174.118/2,5	600	670	730	400	2455	2255	1250	2330	459	830	1289	200	105	65	350x5	300x1	140	100	240-340	110	607	1250	473	235	85



Los motores Diesel para barcos de marca ŠKODA realzan la gloriosa tradición de los productos que llevan esta famosa marca. Su bajo consumo de materias de propulsión, su gran longevidad y su seguridad son producto de las experiencias adquiridas en el servicio y la producción. Estas propiedades y otras ventajas son los factores que garantizan a los motores Diesel ŠKODA un número de compradores cada día mayor.

Los motores Diesel navales ŠKODA tipo 2-6 L 110 son motores de cuatro tiempos, con los cilindros en línea, refrigerados con agua; con la inyección del combustible en la cámara de turbulencia. Un regulador especial de la velocidad de rotación mantiene las revoluciones del motor entre los límites de 500 - 1500 revol./min., según el ajuste de la palanca manual de ajuste del combustible.

La refrigeración del motor se efectúa con una bomba centrífuga autoaspirante. A pedido especial, este motor puede ser dotado de una bomba de dos pistones. Ambas se prestan para la refrigeración directa con agua del mar. Si en el motor 6 S 110 se utiliza la bomba de dos pistones, su velocidad de rotación se reduce a 1250 revol./min. y su potencia a 75 caballos de fuerza.

La puesta en marcha

Los motores standardizados van dotados de un arrancador neumático. Si el comprador lo desearse, estos motores pueden ser dotados de un arrancador eléctrico.

La caja de reducción de reversión, de una construcción completamente cerrada con los árboles alojados en cojinetes de bolas, permite un cambio fácil y rápido de la velocidad de rotación del árbol de la hélice de propulsión. Los engranajes, elaborados con precisión, garantizan un funcionamiento sin averías y una larga duración de los engranes. La caja se comanda mediante un dispositivo hidráulico.

El guía del árbol

El árbol de acero de la hélice de propulsión está alojado en bujes de bronce, embutidos a presión en los cuerpos de los alojamientos, formando junto con un tubo de acero un tubo Steven. El árbol intermedio va provisto de acoplamientos de brida para su conexión con la caja y el eje de la hélice de propulsión. La largura standardizada del árbol intermedio va indicada en la tabla „Dimensiones y características de los grupos navales“.

La hélice

La hélice de tres hojas de acero fundido se suministra a pedido especial de acuerdo al deseo del comprador y después de dar éste a conocer las características necesarias acerca del navío.

Las normas

Los grupos navales ŠKODA son producidos y suministrados, según el deseo del comprador, a través de la Sociedad Bureau Veritas.

Dimensiones y características de los grupos navales

Las ilustraciones, las dimensiones y las características se hallan sometidas a cambios.

Accesorios del grupo

- | | |
|---|---|
| 1. Botella de aire completa | 8. Medidor de las revoluciones |
| 2. Silenciador del escape | 9. Termómetro del agua |
| 3. Depurador del combustible | 10. Bomba de trasiego del gasoil |
| 4. Depurador del combustible y el aceite | 11. Compresor de mano |
| 5. Manómetro del aceite | 12. Juego de llave y herramientas |
| 6. Refrigerador del aceite y bomba del aceite | 13. Juego de piezas de repuesto para el grupo según los reglamentos B. V. |
| 7. Bomba centrífuga autoaspirante | |

Accesorios especiales

y otros acondicionamientos del grupo de acuerdo al deseo del comprador.

STROJEXPORT

PRAHA - TCHÉCOSLOVAQUIE